NATURE MAGAZINE

DECEMBER 1929
VOL. 14, NO. 6

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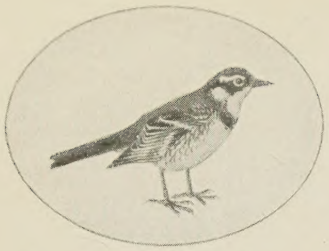

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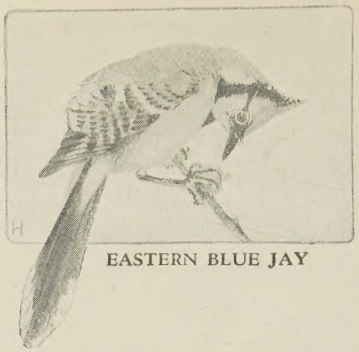

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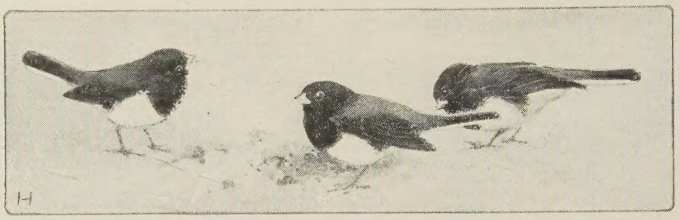

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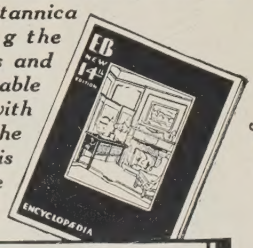

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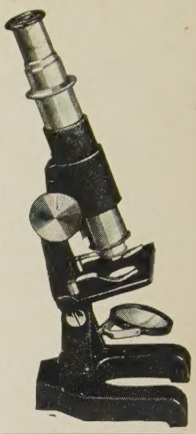


Sunshine To Order

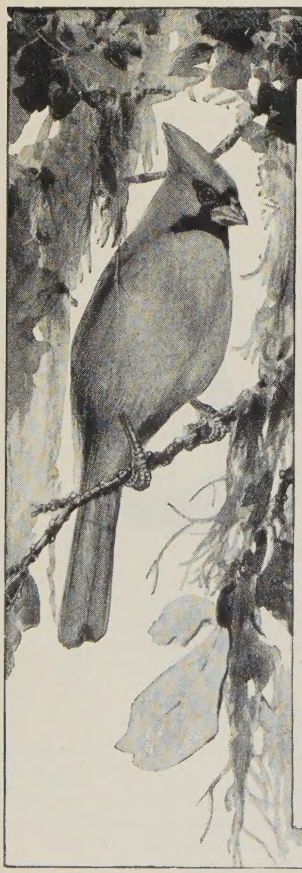
By HOWARD TAYLOR MIDDLETON

The idea of transferring sunlight to dark places, through the medium of a mirror, came with a request for a photograph of a certain splendid specimen of captive 'coon. This beautiful animal, together with three others of his kind, was confined in a small hexagonal pen at a game farm. While the enclosure was open on all sides (wire screening extending from roof to ground), the living quarters were up under the eaves, and as Lotor seldom came to earth except at dusk for an evening meal of shelled corn, if I was to procure a picture in daytime, it must be through artificial light. By my assistant first catching the rays of the sun in a mirror, and afterward directing the reflected light upon the furry subject, I was able to procure fully timed negatives, otherwise impossible except by time exposure—a very uncertain procedure when dealing with a live animal.

It is much more convenient, when making pictures by reflected sunlight, to have an assistant operate the mirror, as by that method the subject may be kept illuminated for an indefinite period. When the mirror is first aimed, and then left in a fixed position by the camera man, necessary expedients when he is working alone, the fact that the sun is ever on the move, causes the light to travel off the subject in a few moments even though the subject itself may remain stationary. Therefore, the interval of time that will necessarily elapse between the setting up and aiming of the mirror, and the camera man getting his instrument into action, may remove the illumination from his nature studio prior to the taking of the picture. This makes it compulsory to change the mirror frequently and forces the photographer to fill two rôles simultaneously, a difficult feat indeed.

Experience has taught the writer that pictures taken by reflected sunlight require more exposure than those secured in the conventional way. I always endeavor to make the exposure as great as possible consistent with prevailing conditions. When the subject is at a distance of six feet or more from the camera, a speed of 1/50 second at F/4.5 will usually engrave a successful image upon a Kodak Super-speed Cut Film. The illustration of the coon was made at such a speed and aperture from

(Continued on page 324)



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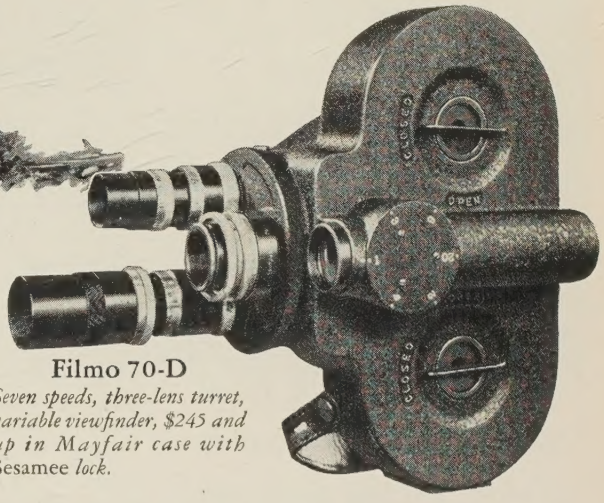

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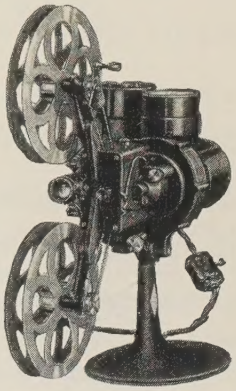

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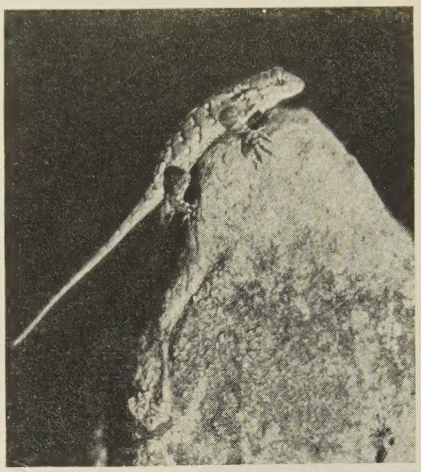

A SWIFT PHOTOGRAPHED WITH THE AID OF A MIRROR FOR LIGHT

a distance of six feet with a 4 x 5 Revolving Back Auto Graflex, fitted with a 6½ x 8½ Tessar F/4.5 lens.

Not only in the interiors of dark buildings is the mirror of great service to the Nature photographer, but in thick woods where little people of the wilderness are encountered in shadow. There are always foliage-filtered splashes of gold to be found upon the forest floor which can be drawn upon for reflective illumination.

When a bird nest is found in deep shade, or subjects to be photographed insist on establishing themselves in "sitting" quarters on the dark sides of tree trunks and rocks, thus forcing the camera man to "shoot" not only in shade but "against" the sun, the mirror helps mightily.

A hand mirror of the size to be found upon milady's dressing table will do nicely for all photographic subjects that are a foot or less in length. In cases where they are larger than that, a mirror fitting the copious game pocket of a shooting jacket is desirable. If a mirror is not available, a piece of polished metal may be used instead, and while such a reflecting medium will prove satisfactory, it will be necessary to use a slightly slower shutter speed with a metal reflector than with a glass mirror.

When the next opportunity for a wonder portrait of the wild presents itself to your camera in some gloomy corner of the zoo, or in some dark forest nook, with only slender beams coming through a skylight or an arched canopy of leaves, remember that even in such places of semi-dusk, there is sunshine to order, and get the picture with a mirror.

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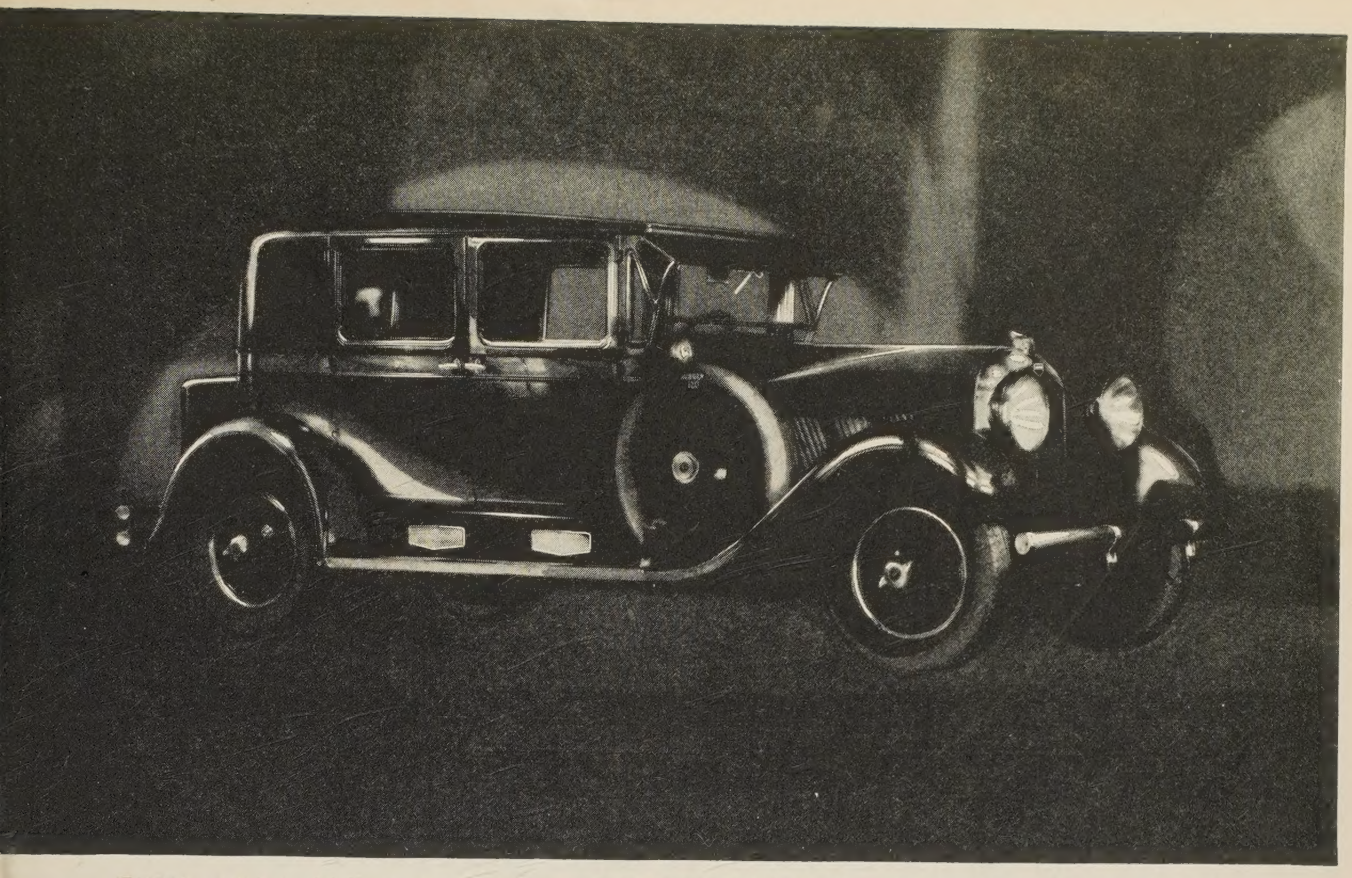

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Perhaps no state in the Union has been as completely a victim of adverse publicity as Florida, the subject of this special number. Each hurricane is greeted with screaming headlines all over the country—each flood is magnified to untold proportions. The result is that many people are frightened out of paying more than a brief visit to the Everglade State. The newspapers, however, do not tell of the balmy winter days, of sunlit hours along the beaches, of beautiful scenes as rich as any in America. There is no news in these—they are too commonplace, too much the daily occurrence.

* * *

The Seaboard Air Line Railway, one of the principal Florida roads, have several crack trains catering to the winter flood of tourists. The Suwanee River Special makes its ninth season début from Chicago beginning November 29, while the Orange Blossom Special, from New York, is added on December 19. The West Coast is served by the Seaboard-Florida Limited, operating from January 4 out of New York. And, of course, the regular year-round trains, the New York-Florida Limited, the Seaboard Fast Mail and the Southern States Special, which, with the exception of the last train, that in winter runs only to the West Coast, serves both coasts, are in constant operation.

* * *

For the tourist exploring both coasts of Florida, the Seaboard offers round trip tickets taking them both in and out without additional cost. One can go to Palm Beach or Miami on such a ticket, go across central Florida past the orange grove and lake section by the Bok tower, and take in Tampa, once the "little Spanish town". Silver Springs may also be included.

* * *

More expensive than rail trips, but offering greater speed, are the transport planes of the Eastern Air Express, which ply on regular 12½-hour schedule between New York and Miami. This will make Florida a week-end resort, that is if the visitor, leaving northern snows for the balmy South, does not forget to come back.

* * *

Another beautiful land beckoning to the storm-bound northern citizen is Hawaii, soon to be at the peak of its season. This year there is an additional reason for visiting these Pacific islands, as slight earthquake shocks have thrown Mauna Loa and Kilauea into action again, and according to the predictions of Professor Jaggar, a sustained lava flow is expected. With no danger to the tourist, one of the most marvellous sights in the world can be enjoyed.

* * *

Those volcano-bound can be excellently served on the Lasso line, which is offering special tour features out of Los Angeles. A 20-day round trip expedition is very

(Continued on page 377)

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The Frontispiece of the Singing Tower

in this issue was etched specially and exclusively for Nature Magazine by Benson B. Moore, noted wild life etcher. So far as we have been able to discover it is the ONLY ETCHING OF THE TOWER in existence. Thirty-five proofs were taken of this etching and the plate destroyed. There are left available twenty-seven proofs, all signed by the etcher.

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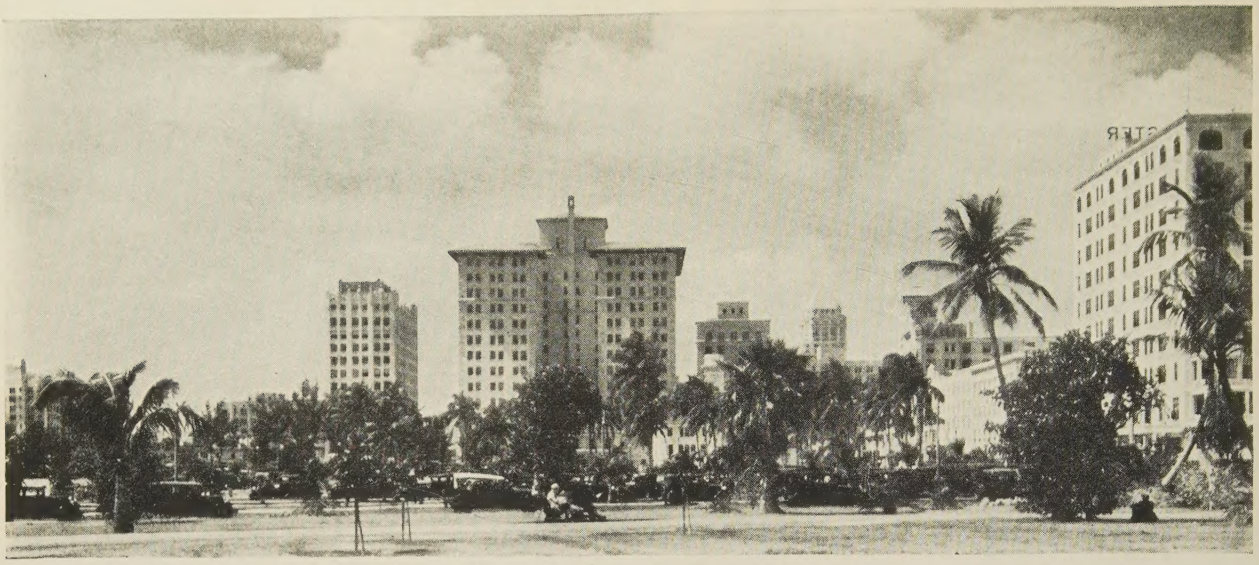

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"The Singing Tower"

by
Will C. Barnes

Mid-Florida. A lovely lake set deep in a grass lined bowl. On every side miles of trees, palms, pines and oranges. Overhead a turquoise sky. In the near-distance a hill. On its crest, outlined boldly against the blue, a tall finger of pink stone points heavenward.

Through the fretted windows at its peak floats the sound of silvery bells.

"Keeping time, time, time, in
a sort of Runic rhyme."

'Tis the Singing Tower. Its famous chimes are broadcasting their melodious message to the world as did the Heavenly voices on Bethlehem's plains two thousand years ago.

Through the tree tops their song comes clear and musical. One of Poe's lines comes to our lips.

"Through the balmy air of
night,
How they ring out their
delight
From their molten-golden
notes
And all in tune."

AT THE BOK BIRD SANCTUARY

One sits entranced. The old songs are in our ears. Martin Luther's grand old hymn, "A Mighty Fortress Is Our God"; then "Annie Laurie"; "Abide With Me"; "Drink to Me Only with Thine Eyes"; "Sweet Hour of Prayer"; one after another they reach us through the quiet air,—songs that never grow old, that never tire, that always bring visions of the past, of childhood's happy days and mother's loving presence.

The road to the hill top winds lovingly round it. Through the trees one glimpses the tower. At the entrance we stop. There, before us, on the highest hill in all Florida stands this colorful picture in stone, a triumph of the sculptor's art, a tone poem in carving. About it trees and shrubbery from every land. At its base a charming little lake in which pink flamingos sleep and dream, the while perched precariously on one long slim leg, their brilliant plumage reflected in the clear still waters.

"The groves were God's first temples." Heads are uncovered. One feels instinctively the near-sacredness of the spot.

At the entrance—there could be no gate to such a place—one stops to read a dedicatory verse.

"The kiss of the Sun for
pardon.
The song of the Birds for
mirth.
You are nearer God's heart
in a Garden
Than anywhere else on earth."

Thousands read this each day and are the better for it. They listen to the chimes as they might have listened to the Sermon on the Mount, reverently, devoutly. They cannot help but appreciate the deep almost religious sentiment that caused the dream of a Dutch emigrant boy to come true and bloom into full and beautiful fruition.

A memorial to his aged grandparents whose last words to him, as he bade them good-bye on leaving for far-off America, were:

"Make you the world a bit more beautiful and better because you have lived in it."

Surely their words have been heeded. Never had parting request a fuller answer, dream a more beautiful birth, or memorial a more perfect setting.

THE SINGING TOWER IN THE
BOK BIRD SANCTUARY NEAR
LAKE WALES, FLORIDA

Reproduced from an original etching done exclusively for Nature Magazine by Benson B. Moore

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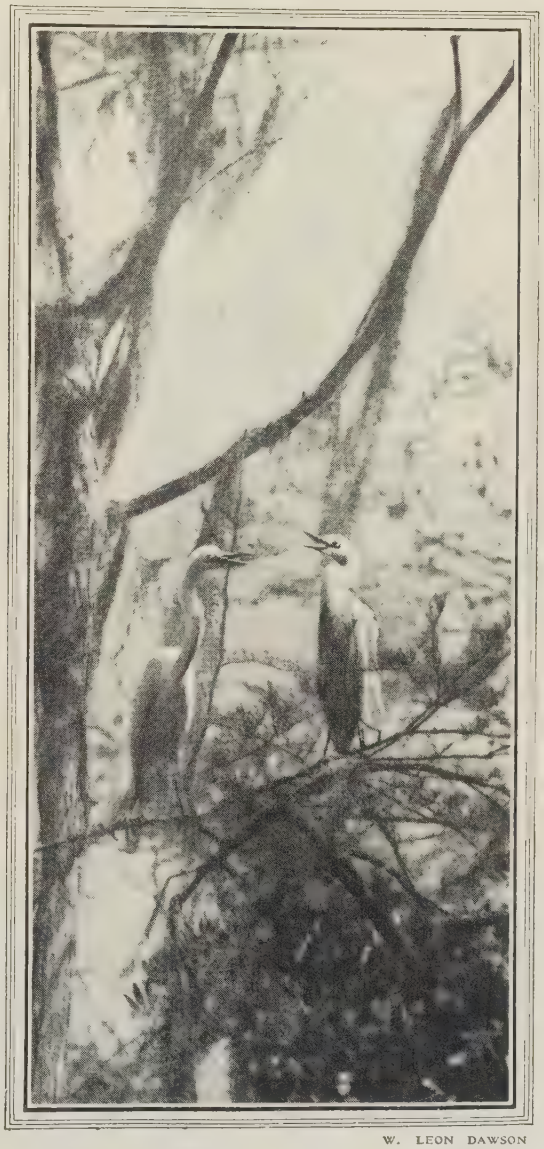
Florida

Land of Ocean shores, Lakes, Rivers, Palms and Pines.

by
DOYLE E. CARLTON
Governor of Florida



W. LEON DAWSON

AMERICAN EGRETS IN A FLORIDA SETTING

These birds, once sought for plumes, are now rigorously protected

THE greatest pleasures of life in Florida are such as are available to everyone. They arise from the simple, fundamental things in Nature—the beautiful cumulus clouds, the ocean with its broad beaches, or the semi-tropical rivers and the thousands of clear lakes, the flowers, the palms and the pines. And always there is the glorious sun with its prodigious capacity to stimulate the rich, moist earth that it may produce a vast abundance of plant life and, secondarily, of animal life.

Each of us recognizes that every civilization in the world has been profoundly affected by the character of the country in which it has arisen. Architecture, sculpture, agriculture, and even the elements of emotional life as expressed in poetry, music, folklore, and history are influenced by the physical environment of the race.

I feel that in Florida the natural conditions are suited to a very high state of human development. The equable climate which brings thousands to Florida in winter permits healthful outdoor activity at all seasons. Our commonwealth, despite its amazing progress in recent years, still holds vast wilderness areas of rich soil. It is, as is so often said, one of America's last frontiers. From the summits of skyscraping buildings, one can still overlook the distant Everglades where the stalwart Seminole poles his way along the watercourses. Within an hour's drive, or less, from settled communities you still can see the colorful aquatic birds in surroundings but little changed from those in which the early Spanish adventurers first beheld them. It is the intention of the state to preserve this attraction of the native wild creatures of Florida and, before it is too late, save for future generations the rich and abundant life whose presence is so refreshing to mankind. There are large areas in

FT. MYERS CHAMBER OF COMMERCE

AN AVENUE OF STATELY ROYAL PALMS

This street in Fort Myers is typical of the distinction these trees lend to many communities

Florida which will always be suitable to water birds. With the protection now given, and further steps planned, I am sure they will continue to increase, as so many give every evidence of having done during the past few years.

Once you are confronted with the physical conditions of Florida you understand in a moment why the climate is so equable. The water is an inseparable part of almost every Florida landscape, with more than two thousand miles of ocean shore, myriad clear inland lakes, and numerous watercourses. On the lower east coast, passing from the Gulf of Mexico between Cuba and Key West, flows that great ocean river, the Gulf Stream, a thing of power, beauty, and mystery which lends its equalizing influence to a large part of the Florida peninsula. Like other great ocean currents, it abounds in food for fishes and ever bears to Florida's shore a great variety of food and game fish for the amateur and commercial fishermen. On the west is the Gulf of Mexico, source of the Gulf Stream which performs a like service as a climatic balance wheel for the western coast. It, too, abounds in semi-tropical fishes and holds the interesting sponge industry. Along the northeast coast the broad Atlantic sweeps the shores where Ponce de Leon, intrepid visionary, first landed on our shores and called the land Florida after the holy day, Easter Sunday *(Pascua del Florida)*, of March 3, 1513.

Florida's insular position produces a climate of singularly even character. To the ocean with its broad beaches is due the amazing growth of its great shore resorts with their facilities for comfort and luxury. But inland Florida also enjoys the equalizing influence of the waters and the charm of water vistas fringed by semi-tropical luxuriance.

THUS GENTLY NATURE DEALS WITH THE PAST

The picturesque ruins of the Franciscan mission of a former day where New Smyrna is now

NINAH M. H. CUMMER

Through the interior of the state from south to north flows the St. Johns, our largest river, a picturesque and mighty stream, affording an artery for a considerable commerce. Its banks, often dotted with stately live oaks, or lined with palms, or disclosing picturesque lagoons, make

a journey upon its broad bosom a real delight. One of the tributaries of the St. Johns River, the Oklawaha River, is fed by the beautiful Silver Springs.

Still farther to the south, the Kissimmee River flows from the north into Lake Okeechobee, the second largest body of water wholly within the limits of the United States. The lake has an area of about one thousand, two hundred square miles. Once hid in an almost impenetrable fastness, it is now easily reached by good roads, and is encircled by a picturesque highway shaded by lofty cypress trees. In the western part of Florida is the Suwannee River, famed in song and story, which rises in Georgia and crosses the state.

With lakes and rivers fringed by the palms and pines, oaks and cypress, and the mild breezes from the Atlantic or the Gulf of Mexico passing across these inland waters we find that despite the fact that the twenty-sixth parallel of latitude crosses the southern peninsula of Florida, not far from Miami, the intensity of the heat is not such as one would infer from Florida's geographical position. Indeed, I have never heard of anyone having a sunstroke in Florida, though the twenty-sixth parallel also bisects the burning Arabian desert and passes near the second cataract of the Nile.

PUBLISHERS PHOTO SERVICE

SUNSET AND PALMS ON INDIAN RIVER

There are many vistas like this from the shores of Florida's lakes and streams

But Florida extends farther south. From the southern tip of the state reaches the long chain of Florida Keys, green with mangroves and other verdure, flanked by shoals which assume every tint of the rainbow, and extending to Key West and, beyond, to the Dry Tortugas, some sixty miles farther. Islands and peninsulas parallel the whole east coast of Florida, providing the sites of Daytona Beach, Palm Beach, Miami and other attractive resorts. Islands also fringe the west coast beginning with the Thousand Islands, a region frequented by aquatic birds. A great railroad system passes high over the keys and ocean to Key West, offering a most spectacular journey above the gorgeous shoals and vast ocean passes which at times reach a depth of forty or forty-five feet. An

FLORIDA'S BEACHES NEED NO ADDED WORDS

Here the sunshine sends its healthful rays down on the sands at Long Key

COURTESY FLORIDA EAST COAST RAILWAY

automobile highway is partially completed to Key West and is already open to traffic, the water gaps being bridged by ferries. Upon this journey many sea birds are to be seen, including some of the species described by that master of ornithological biography, Audubon, upon his visit in 1832 to Bird Key, one of the Tortugas which constitute the end of the chain.

Nature lent a helping hand in the construction of the railway and of the highway through the Florida Keys, for the calcareous deposits which uphold a large part of the state afford a material ready for the making of embankments or roads. The ancient sea bed which underlies Florida, often cropping to the surface, has given it many resources besides oolitic limestone. Farther north, in the west center of the state, are the immense deposits of phosphate, a mineral whose origin is due in part to the fossilized remains of prehistoric sea animals. Near the northeast coast is found the coquina rock studded with marine shells, which the early Spanish at St. Augustine used in the construction of fortifications. Quite recently in the interior a very valuable Travertine building stone has been discovered and mining work has already begun. Fuller's earth and kaolin are among the mineral products Nature has given to Florida. The northern part of Florida is extensively underlain by limestone rock and largely covered by a sandy area whose surface humus yields abundant crops.

GIANT TREES ARCH OVER MANY A FLORIDA HIGHWAY W. M. BUSWELL

Excellent automobile roads have placed most of the natural beauties of the state within reach

Lovers of Nature will find in Florida an arterial system of more than 7500 miles of modern highways, permitting one to traverse the whole state in comfort. Many of the bird sanctuaries are located along or near good roads and, with a comparatively short drive, the ocean or one of the inland lakes and rivers may almost always be reached. A few years ago there were no roads between the lower east and west coasts. Today the southern part of the peninsula is crossed by four highways. Of these the most pretentious is the great Tamiami Trail, constructed at a cost of approximately $15,000,000 between Tampa and Miami.

Florida is readily entered by good roads from every northern point. From the West the Old Spanish Trail, leading from San Diego, California, passes through the northwestern part of the state. At Tallahassee, our capital, you will find a city reminiscent of the antebellum south, with its mansions in the old southern architecture, and high rolling hills that one does not ordinarily associate with Florida, and huge bearded live oaks. On the east coast is the fast growing port of Jacksonville, near the mouth of the broad St. Johns River. Jacksonville Beach, St. Augustine Beach, Ormond Beach, and Daytona Beach are, since the inlets have been bridged, practically a continuous expanse. Farther south the chain continues, broken here and there by picturesque inlets.

THE BANYAN TREE

A peculiar immigrant which seems to do much of its root work above the surface of the earth

In the interior of the peninsula we strike a

gently rolling country and many lovely lakes. Gainesville, seat of the State University, Ocala, De Land, Orlando, and Lakeland are pleasant centers in the long-established citrus fruit section. From Lakeland one may ride into Tampa, located to peculiar advantage on Tampa Bay, and inherent with all the charms of the Florida littoral which continue as one goes across the Gandy Bridge to St. Petersburg, or up or down the coast. It was in spacious Tampa Bay that Fernando De Soto's expedition landed in 1539.

At this latitude, in the interior, we reach the city of Kissimmee whence the Kissimmee River flows through the central plateau south into Lake Okeechobee. On the left going south and far from the beaten trail are the vast Kissimmee prairies, dotted with lakes and inundated basins, groves of lofty palmettoes and islands of cypress. It is a beautiful sight to behold a great white heron winging his way among the green pines as he passes from one waterhole to another. On the prairies burrowing owls, perhaps a pair of stately sand hill cranes, possibly an eagle or two in the heavens and, almost always, an osprey, add a primitive touch to the landscape. Flocks of curlews so vast that their wings sometimes obscure a portion of the sky are observed at times of favorable migration.

DR. A. A. ALLEN

FLORIDA BURROWING OWL ON ITS MOUND

Florida has a species all its own, as is the case with many others of its birds of wide-spread range

The public is familiar with our great Florida resorts. Those of the lower west coast, Tampa and St. Petersburg were largely developed by the late Henry M. Plant, who first built a railroad to Tampa Bay. Henry M. Flagler who died in 1912 was the pioneer of the east coast and with Mr. Plant paved the way for the prodigious development of the peninsula. Mr. Flagler was first attracted to the fine old city of St. Augustine in 1885. By 1896 he laid out the townsites of West Palm Beach and Miami, and in 1912 completed his railroad which he had built south along the east coast, across the Florida Keys.

The great communities of Miami and Miami Beach, which embrace a large section of Biscayne Bay and employ to supreme advantage the art of the landscape architect and builder in embellishing the natural location, and also Palm Beach and West Palm Beach, are monuments to Mr. Flagler, just as the beautiful cities of Tampa and St. Petersburg attest Mr. Plant's great foresight.

Such early pioneers of

(Continued on page 378)

DIXIE HIGHWAY ALONG THE INDIAN RIVER

A drive in a tropical atmosphere near the town of Fort Prince

COURTESY FLORIDA EAST COAST RAILWAY

Florida's bird life is one of its most distinctive features and includes many species which are peculiar to the State alone and are so named in the books of ornithological record. Here we have the Florida blue jay perched on the limb of a Florida orange tree

PHOTOGRAPH BY DR. A. A. ALLEN

Across the sea by rail,— a part of the over-sea extension of the Florida East Coast Railway which takes the visitor from the mainland to Key West

One of the most fascinating industries in Florida is the sponge industry. Here is shown the work of unloading sponges at Tarpon Springs dock

COURTESY OF THE TARPON SPRINGS CHAMBER OF COMMERCE

W. A. MURRILL

The wealth of her flowers, wild and in garden, is one of Florida's greatest charms. Here is a lovely water lily on one of many ponds

Nature has endowed Florida with many of the things that make for health, not the least of which are her waters, inland and coastal. Here bathers are taking a night moonlit plunge at West Palm Beach

Palms of many species have home in Florida and serve to lend a lovely tropic charm to her towns and cities as they do here on picturesque Palm Avenue at Palm Beach

PUBLISHER'S PHOTO SERVICE

N. Y. ZOOLOGICAL SOCIETY

BAY LYNX, LIKE AN AMIABLE CAT

In reality, however, he is considered a pest, although he does render some service to man

FLORIDA'S MAMMALS

Most of Them are Like Their Northern Relatives

by Arthur H. Howell

U. S. Biological Survey

FLORIDA has been famous as a hunting ground since its discovery by the Spaniards in the 16th century, but what a paradise it would have been for hunters with modern rifles in the prehistoric days of the Pleistocene era—some 500,000 years ago—when its marshes and prairies were occupied by the great beasts of that time—wild horses, camels, bisons, sabre-tooth tigers, elephants, mastodons, tapirs, peccaries, giant ground sloths, and other strange creatures!

There were hunters there in those days, too, for human remains have been found in the fossil beds, associated with the bones of these extinct animals. But they did not have rifles, and perhaps in their struggles with the great beasts they led a rather precarious existence.

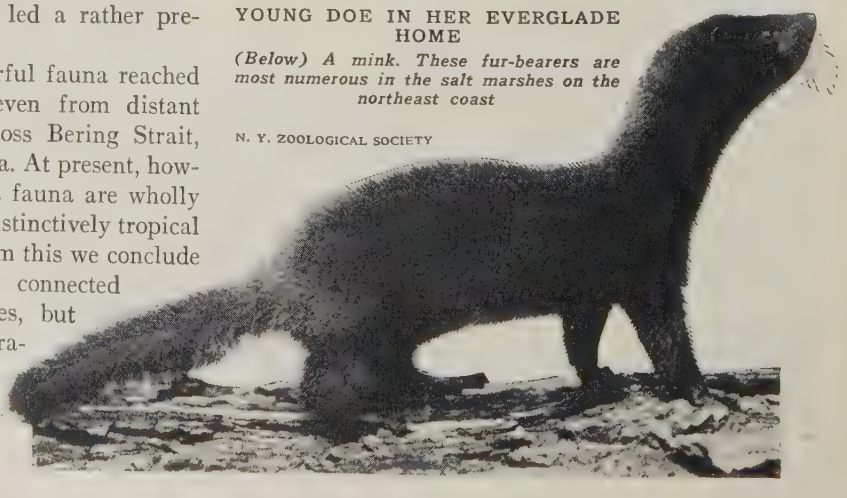
Some of the species of this wonderful fauna reached Florida from the north, perhaps even from distant Asia, by way of a land bridge across Bering Strait, while others came from South America. At present, however, the relationships of the Florida fauna are wholly with North America, there being no distinctively tropical land mammal found in the state. From this we conclude that Florida has not been directly connected with South America in recent times, but that all its mammals arrived by migrations from the north, or from the south through Mexico. The single tropical species occurring in the state is the manatee, an aquatic species which, of course, came by water from Central America or the West Indies. Although not of great age, geologically speaking, Florida is old enough to have developed several very distinct species of mammals, and one genus, *Neofiber,* peculiar to the state.

During the latter half of the 19th century, the peninsula was a mecca for sportsmen and many hunting parties from the northern states made annual visits to the favorite resorts, which were chiefly on the east coast as far south as Enterprise and the Indian River. Turkeys, quail, and waterfowl were the principal objects of pursuit, but for

YOUNG DOE IN HER EVERGLADE HOME

(Below) A mink. These fur-bearers are most numerous in the salt marshes on the northeast coast

N. Y. ZOOLOGICAL SOCIETY



those who preferred to hunt larger game, there were deer in abundance. These are still plentiful about the borders of the Everglades and in the Big Cypress country.

In the early days, Florida harbored three species of large carnivores,—the timber wolf, the cougar, and the black bear. Of these the last two are still to be found, but the wolves have been exterminated, and that before we had learned much of their habits, or secured more than a very few specimens to show their characteristics. Statements of early travelers indicate that the majority of the Florida wolves were wholly or partly black, although some individuals were of the normal gray color. As in other parts of North America, they were harmless to man, but destructive to domestic cattle and hogs. Their extermination was accomplished about the beginning of the present century.

N. Y. ZOOLOGICAL SOCIETY

THE BLACK BEAR OF FLORIDA

This is almost the only large carnivore remaining and survives only in the densest swamps

The cougar or puma, more commonly called "panther", still occurs in small numbers in the wilder parts of south Florida, on the borders of the Everglades and in the "Big Cypress". It is a somewhat smaller animal than the mountain lion of the Rocky Mountains, but it is of the same tawny color, and like all of its tribe, is a timid, inoffensive beast. A black individual has been reported in Dade County by several observers. On one occasion a botanist collecting ferns in a sink hole near Homestead was astonished, on looking up, to see this black panther standing about five feet away, his paws resting on the rim of the hole. The frightened botanist gave voice to a vigorous yell, whereupon the animal turned and slunk away. The Florida cougar is quite destructive to hogs, especially those semi-wild creatures which roam the swamps at some distance from habitations.

The black bears resemble the bears of other sections both in appearance and habits. They were formerly abundant, particularly in scrub lands near the east coast, but now are scarce and confined to the densest swamps. They are said to hibernate during January and February, as in all the other parts of their range.

H. F. HILL

RACCOONS ARE NUMEROUS

They are found in wet places and feed on crawfish and the eggs of the soft-shelled turtle

Florida is well supplied with fur bearers, whose pelts furnish a considerable source of income to the Seminole Indians and professional trappers. The most important is the otter, which is abundant in the Everglades and the big marshes of the upper St. Johns River. Others locally numerous are the mink, raccoon, two species of skunk, the bay lynx or bobcat, the weasel and the gray fox. In habits all these resemble their relatives in other sections.

The little short-tailed, spotted skunks, ranging chiefly on the prairies in the central part of the state and in the dense scrub along the Atlantic coast beaches south of Mosquito Inlet, are easily tamed and make attractive and useful pets, being expert rat catchers.

Almost anywhere in the dry, sandy pinelands of Florida, one may see numerous conspicuous mounds of earth, about the size of a peck measure, thrown up at frequent intervals. These are the diggings of a species of pocket gopher, which by a strange misapplication of terms is universally known in

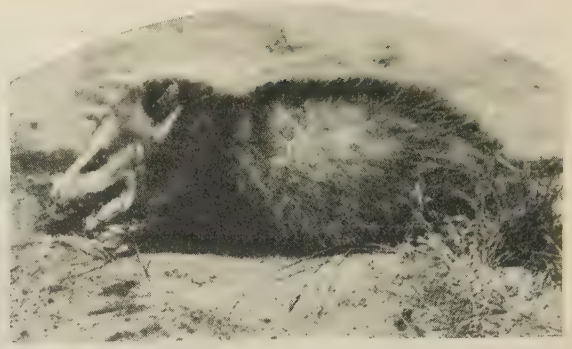
MOST NOTABLE OF ALL FLORIDA MAMMALS

It is the only tropical species in the state and is killed in numbers by a severe cold spell

H. F. HILL

DEER AND THE HUMBLE OPOSSUM OF THE HAMMOCKS

The deer of north Florida are of good size but further south they are smaller and on the Keys a very small form is found



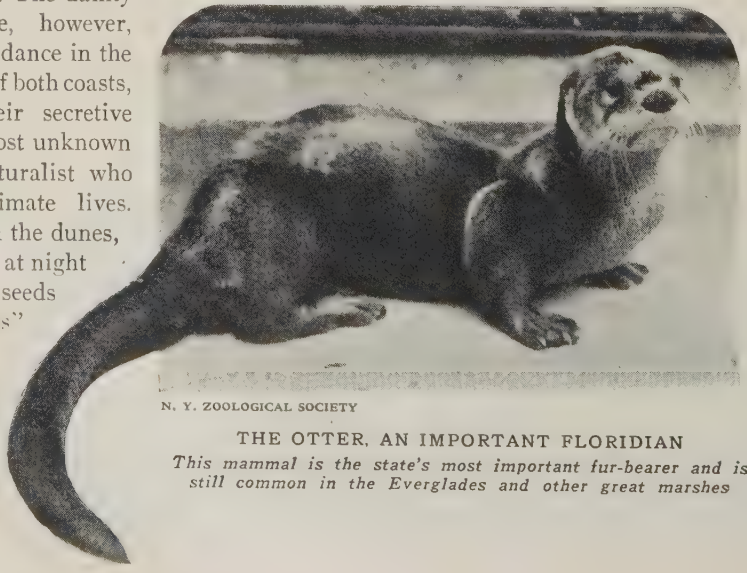
the South as a "salamander," whereas the term "gopher" is applied to a large burrowing land tortoise. Only very rarely does one have a chance to see the pocket gopher, for he emerges from his burrow only at night and that for only a few moments. Having pushed out a load of earth, he packs the soil solidly behind him as he goes down into the tunnel which serves as the highway that leads him to the roots and tubers of various plants, on which he feeds. Fortunately, the gophers of Florida live chiefly in waste lands, and rarely attack cultivated crops or fruit trees, as do related species in the West.

Several species of the wide-ranging deer mice occur throughout Florida, differing but little from their relatives farther north. The dainty little beach mice, however, which live in abundance in the white sand dunes of both coasts, by reason of their secretive habits remain almost unknown to all but the naturalist who studies their intimate lives. Burrowing deep in the dunes, and emerging only at night to feed upon the seeds of the "sea-oats" growing in their dooryards, they leave little evidence but their tiny footprints where they have scampered about in the moonlight like four-footed fairies. All of these beach mice are pale-colored, in harmony with their surroundings, and the species found on the snow-white sands of Santa Rosa Island, in West Florida, is one of the palest of our native rodents—as white as the sand on his belly, head, and tail, and light drab on his back.

Florida has her full quota of wild rats, each occupying its own particular "niche". Grizzled grayish or brownish cotton rats —chunky fellows with short tails—abound in scrubby thickets, broom-sedge fields, and about cultivated lands; rice rats, of slenderer build with long tails, inhabit marshy tracts and moist bottoms; wood rats, of a rich tawny color, live in the wooded swamps, building large stick nests at the base of a hollow tree or in a fallen log, and the roof rat, an immigrant from the Mediterranean region, has become well established, not only in dwellings and barns, but in the hammocks as well, where its nests are often found in trees, some distance from the ground.

Although Florida has vast areas of marsh land, muskrats are not known to occur in the state. Their place is taken in part, however, by a somewhat similar animal, known as the Florida water rat or round-tailed muskrat. About half the size of a true muskrat, it resembles the latter in color and in the character of its fur, but has a round instead of a flattened tail, and its hind feet are not specialized for swimming, as are those of the muskrat. This remarkable animal, developed in the Florida swamps and ranging no farther north

(Continued on page 378)



N. Y. ZOOLOGICAL SOCIETY

THE OTTER, AN IMPORTANT FLORIDIAN

This mammal is the state's most important fur-bearer and is still common in the Everglades and other great marshes

FLORIDA'S WILD FLOWERS

by Mary Francis Baker

W. M. BUSWELL

FROM the days when early explorers in America found flowers described as "fantastical," and plants "stupendously marvelous," the Florida flora has been a lodestone, drawing men from distant countries to collect and study the native plants.

Travel in the eighteenth century was a slow and hazardous adventure, even in the more settled parts of the country, and the naturalists who then visited Florida pushed through uncharted wilderness, and toiled through many difficult and dangerous miles, not from the desire for gold or glory or land but attracted solely by Florida plants. Nor was their quest unrewarded.

No other part of our country can show so great a variety in its flora, or so many plants of unusual interest and beauty. No soil is too unpromising. On the sea beaches adventurous flowers open on the sands. On dry barrens the singular Florida rosemary, with little needlelike leaves and minute reddish flowers, forms decorative bushes. In pinelands, prairies, and marshes Florida wild flowers are a perpetual joy to the lover of beauty. And, as though the solid earth were too limited to display their exuberant life, dense colonies of orchids,

ABOVE, WATER HYACINTH IN A FLORIDA MARSH

Below we have the dainty blue flower of Ruellia; *at the left the interesting and intricate passion flower; to the right the yucca of Florida known as* Yucca filamentosa

PHOTOGRAPHS BY W. A. MURRILL

M. F. BAKER

(Right) LOVELY FLOWER OF THE SEVEN-YEAR APPLE
At the left a Florida weed, Bidens leucantha

W. M. BUSWELL

"living fossil," the zamia or coontie, which resembles both the palms and the ferns, without being related to either, and whose starchy root yielded a superior food to the Indians, is a relic from the strange prehistoric flora. It is a low plant, its shining pinnate leaves encircling a soft brown cone which, in the pistillate plants, astonishingly falls apart at last in a heap of conspicuous large red seeds on the forest floor.

Air plants, commonly known as wild pines because the leaves of some species resemble the stiff, sharp leaves of their well-known relative, the pineapple, ornament Florida trees with a great diversity of peculiar forms. One of the common air plants has such a multitude of narrow leaves that the plants seem like tufts of reddish grass air plants, and ferns ornament the trees in the southern part of the state, where they form veritable hanging gardens of verdure and strange blossoms on the branches.

There are stout ferns, taller than a man and graceful brakes growing to more than a dozen feet in height. There are epiphytic ferns that look exactly like bunches of grass fastened to the tree trunks, others whose large leaves are seen high among the "boots" of cabbage palms, and still others that wither and apparently die in dry weather but revive in fresh greenness wherever there is rain.

That decorative growing on the trees. Another air plant, with heavy clusters of long, pale green leaves, sends out a flowering stem two to three feet long, and yet manages to cling with all this weight against the straight trunks of trees. A showy air plant sheathes its flower buds in shining crimson bracts that are far more conspicuous than the blue flowers; a rare species has leaves exquisitely zoned with horizontal bands of brown and green, and the most abundant and well-known of all our air plants, the graceful Spanish moss, which adds remarkable beauty to the trees, blossoms in innumerable little lily-like yellowish flowers that become fragrant at night.

All plants have interesting characteristics that may be discovered when we take the time to know them, but few are so endlessly mysterious and fascinating as are the insect-catching and insect-devouring plants, of which Florida has an especially large number, comprising species of butterworts, sundews, pitcher plants, and bladderworts. No less than five species of pitcher plants grow in Florida, and the large flowers of purple, reddish brown, or yellow are so remarkable in form that a writer in 1672 aptly called them "fantastical flowers." Yet the hollow, trumpet-shaped leaves, dotted and veined with white and red and purple, are even more fantastic than the flowers, and most fantastic of all are the means by which these handsome leaves lure and capture and devour their living prey.

When we turn from plants

THERE ARE MANY PITCHER PLANTS
No less than five spectacular species are to be found in Florida

of unusual habits to those whose beauty alone attracts us, it is difficult to select a few for mention from among so great a number as are found in Florida.

It has been written of one of Florida's wild flowers that it "is probably the most gorgeous of all the plants indigenous to the United States." This superlative praise was given to a tall hibiscus that opens crimson flowers five to eight inches across. Like several other species of wild hibiscus, this crimson-flowered one blooms in the borders of swamps in summer, at a time when low grounds in many places are gay with the southern red lily, whose upright solitary flower, of red and yellow spotted with purple, tops a stem set with many narrow erect leaves. A rudbeckia with crimson ray flowers; a basil with crimson flowers an inch and a half in length; a gilia whose tall green plumes become flaming torches of innumerable scarlet flowers; a tall wild canna with large yellow flowers, and the Cherokee bean, whose odd flowers and seeds both are red, are among the many conspicuous Florida plants.

Hidden by the grasses of low grounds, perhaps only a few steps from the gorgeous hibiscus, a tiny burmannia sends up threadlike purple stems, only a few inches in height, which bear purple flowers so small that an ordinary magnifying glass scarcely discloses their structure. And far and wide through pinelands and marshes grow the pipeworts, locally called immortelles, which crowd their tiny flowers in buttonlike heads that in some species are less than a quarter of an inch in diameter.

W. A. MURRILL

THE LUPINE IS QUITE COMMON

It is found generally in dry places, gray-leaved and blue-flowered

In dry places grows a handsome lupine in spreading masses of silky grayish leaves and many blue flowers. Prairie clovers blossom in pink, white, and light purple; wild buckwheats grow as miniature bushes covered with countless tiny flowers ranging in color from white through shell-pink to rose; and the shrubby garberia, found only in Florida, is beautiful in autumn with a profusion of fragrant flowers of delicate purple and pink.

The exquisite passion flowers of America were "stupendously marvelous" to Spanish explorers, whose enviable imagination lent life an added pleasure. The leaves, the tendrils, the flowers, and even the seedpods of these plants appeared to them as symbols of the Christian religion, and the plant was therefore counted by them as divinely "designed for the conversion of the heathen among whom it grows." The name of maypop, commonly given the passion vine that is abundant in Florida, tells nothing of the beauty of the large flowers, over whose lavender petals is spread a fringed corona banded with purple and white.

The large family of orchids has many species in Florida, ranging in size from plants so small that they are seldom noticed to great epiphytes perched on the trees and bearing flowering-stalks three to five feet long, with scores upon scores of mottled blossoms. A pretty butterfly orchid grows

W. A. MURRILL

(Left) HOUSTONIA, DAINTY FLOWER OF EARLY SPRING

At the right one of the many air plants found

W. M. BUSWELL

W. A. MURRILL

PRICKLY PEAR AND THE FLOWER OF THE CAMELLIA

Through botanical history many superlatives are found applied to the flowers of Florida

W. A. MURRILL

on the trees in many places, forming luxuriant gardens with air plants and ferns. A rare epiphytic orchid has a solitary white flower one of whose divisions is sometimes half a foot in length. During winter and spring magenta orchids and fragrant pink orchids blossom in profusion in low grounds, where several northern species grow to a size they never attain in colder regions. A tropical orchid, with a stout stem one to two feet tall, varies its color in different locations and is sometimes wholly of shades of red in stem and flowers, sometimes wholly yellow, and sometimes pale green. A white orchid sends up flowering-stems by hundreds in the marshes; conspicuous spikes of the beautiful yellow-fringed orchid flame in low pinelands; in autumn a white-spurred orchid often has the fragrance of cyclamens at night, and a tall orchid bears many greenish flowers that shed an oriental perfume.

W. M. BUSWELL

FLORIDA PLANTS DO NOT ALL GROW IN SOIL

There are many which find the trees as their host and spread their blooms aloft. Here is one

Those insatiable travelers, the weeds, invade Florida in forms unknown in northern states. Several of the Florida weeds are so attractive that they might be planted as cultivated flowers if only they were not so annoyingly aggressive in taking uninvited possession of the land. The Spanish needles have white and yellow marigold-like heads; the pink flowers of Caesar's-weed imitate, on a small scale, the hibiscus to which it is related, and the tassel flower, a weed that is pushing its way up through the peninsula from the West Indies, has flowering-heads that look a bit like little red carnations, all on parade.

Many typically northern species, such as sumac, hickory, maple, partridge berry, and pond lily, extend their range far down in the peninsula and mingle with the tropical flora which advances upward from the Keys and southern Florida, where the true mahogany with odd fruit, myrtles with fragrant leaves, the gumbo limbo with trunks like glistening copper and bronze, and many other tropical trees, shrubs, vines, and lesser plants are found, and where the magnificent moonflower climbs in profusion over the trees and adds the fragrance of its large white flowers to Florida nights. To this region belongs the satinleaf, a tree whose leaves are of such unusual beauty that they defy description. Jade and gold, emerald and topaz are words too cold to give even a suggestion of the coloring of the leaves, which beneath glisten like burnished copper or warm reddish gold, while the upper surface seems enamelled in bluish green.

The fairy lilies that deck the forest floor, the round-leaved houstonia, forming green mats of leaf-mosaic

(Continued on page 379)

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RISING FROM THE WAVES IN A SURGING MASS OF BRINE
Seeing the sailfish jump is a magnificent spectacle as it seems to hang suspended, enshrined in a rainbow of spray

GREAT GAME FISHES

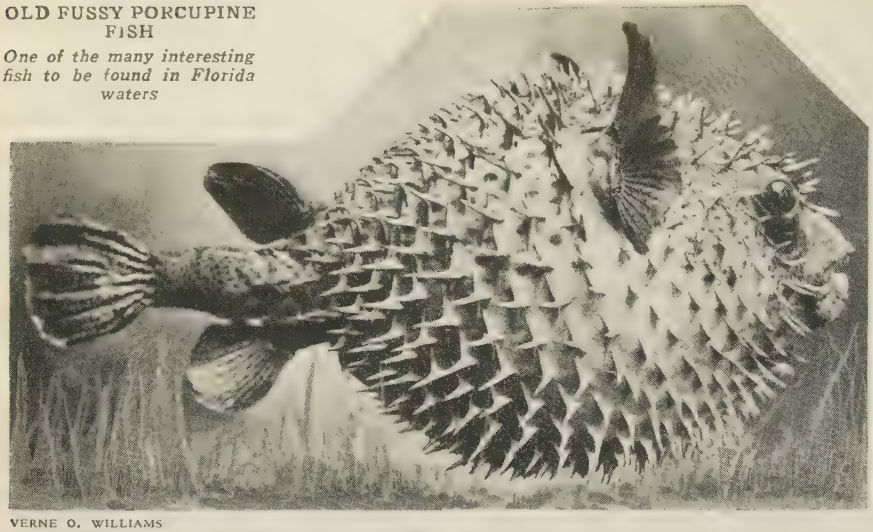
Florida's Seas Provide Rare Sport for Waltonians

by Hamilton M. Wright

OF ALL the great game fishes in the ocean near Florida, the splendid sailfish is first in interest. Although this lithe acrobat of the Gulf Stream is needlessly slaughtered by thousands each year, it still remains one of the least known of the popular tropical fishes. No one really knows where this quaint wanderer of the deep breeds, whither he goes, or whence he comes. But he cruises along the Gulf Stream, alone, in couples, or in small schools, sometimes quite small, though well past the baby stage, one of the quaintest fish in all the world. His querulous down-turned mouth and large bright eyes set near its base; his long beak, and high, flaunting purple-splotched dorsal fin, which suggests the frill of some long vanished saurian, give him a strangely bird-like appearance.

Sometimes when I have seen the sailfish exhausted after a thrilling battle, for he is one of the bravest, gamest fish in tropic seas, he has seemed to me to bear the deeply injured look of a hurt young robin. But when I have beheld him leaping far above the waves with giant crest erect, and long narrow mouth open as he frantically attempted to shake the hooks from his mouth, I have thought of him as an angry blue jay, screaming at some intruder that comes too near its nest. His great swallow tail, too, is bird-like.

Sometimes, on calm days, I have seen him leap, a half a mile distant, a long, twisting figure silhouetted against the horizon, perhaps to descend head first among a school of ballyhoo or pilchers, or perhaps trying to free himself of a little sucking fish that has taken up its abode among his gill crevices. He is a marvelous jumper. To behold our great Istiophor rise from the waves in a surging mass of brine, and seem to hang suspended in the air for a moment at the top of his leap, far above the surface, enshrined in a rainbow of spray which matches the beautiful and elusive metallic tints that climb up the sides of his pearly throat, is indeed a magnificent spectacle. A sturdy sailfish is capable of such continued effort that the crested giant has been known to "walk the water" for seventy-five feet or more. It is the strangest and most amazing of his "stunts", for by swift and powerful movements of his tail he



OLD FUSSY PORCUPINE FISH

One of the many interesting fish to be found in Florida waters

VERNE O. WILLIAMS

raises his body well out of the sea as he propels himself over the waves at an angle, like a man bearing against a heavy wind.

This familiar yet mysterious wanderer of the Gulf Stream is one of the great group of mackerel-like fishes, —the tunnys, the sword fishes, albacores, bonitas, and others,—sea rovers all, swift and restless. Like his big cousin, the swordfish, whom he closely resembles, he is wont to flail his prey with his bill before feeding, a fact that often leads to his undoing when confronted by fishermen who have mastered the technique of sail-fishing.

Of course, no one really knows the why or wherefore of the sail, which is directly connected with the spinal column and can be lowered into its groove along the back, or raised at will. Dr. David Starr Jordan has written me that he has never seen a baby sailfish nor does he know of any one who has. In the million specimens of fish preserved in formalin in the National Museum at Washington, Dr. Bean has not a single baby sailfish. Yet commercial fishermen at Key West have told me they have seen eighteen-inch sailfish when looking through water glasses on sponge hunts. I hope it may be true, for I should like to learn that I am mistaken and that some one knows where the beautiful Istiophor breeds.

Next in popular interest among ocean game fishes found near Florida, and, indeed, first in interest with many sportsmen, is that giant member of the herring family, the Silver King, *Tarpon atlanticus*. He is fuller of tricks to free himself of the hook than a sailfish. Roaring through the water, leaping with a vast cataract of spray, he shakes his huge head like a bull dog and has been known to throw the hooks to a distance of fifty feet.

The tarpon is found on both coasts of Florida. In winter he takes to the open ocean but in late spring and early summer the great fish runs up into fresh water streams to spawn. Indeed, perhaps very few persons appreciate how completely the tarpon can adapt itself to fresh water. I once saw a landlocked tarpon about three feet in length that was taken by fishermen seining for bass and catfish in Lake Okeechobee.

In early days most of the amateur fishermen went for their tarpon in June to the lower west coast of the state in the region of Tampa and Sarasota, famous grounds, where annual tournaments are held, or they fished in the New River at Fort Lauderdale, a favorite fishing resort for Joseph Jefferson and Grover Cleveland, or at the mouth of the St. Johns River near Jacksonville, among many other places. But today this splendid game fish is taken in the surf along most of the coast by adventurous fishermen who have tried out new spots for themselves. A friend has caught many within a good stone's throw of Daytona Beach, and numbers are caught near Miami.

Tarpon are far more plentiful than most of us realize. The best estimate of their numbers can be made in winter when they may be seen in schools of hundreds. Several years ago I was informed by fishermen at Key West that they had seen a school estimated at five thousand in the open ocean, five miles from the city. Of course such estimates are liable to be all wrong, but it is certain they school in very large bodies in winter when immense specimens far surpassing the amateur fishing record sometimes are taken by commercial fishermen.

But the most iniquitous of the great

THE TARPON IS A FAVORITE FISH

A catch of fish and three of the Waltonians in exultant mood at New Smyrna, Florida, popular fishing location

ocean game fish of Florida is the giant barracuda, *Sphyraena barracuda,* the "Tiger of the Seas." He may be found on a submerged shoal in eighteen inches of water, in a tidal estuary or canal, or five hundred miles at sea. He seems to breed everywhere. Small specimens can be found at intervals in every mile of coastal waters in southern Florida. These immature savages are so voracious that each seems to require a separate hunting ground. But, in my experience, the biggest barracudas are usually to be found in the clear waters of the ocean reefs, 20 to 60 feet in depth, where there is an abundance of reef fishes to prey on. Yet I have seen a calm bay, three feet in depth, turned into a veritable Niagara of noise when jacks and barracudas on a moonlight night harried an enormous school of mullet almost to the very beach. Like wolves, the barracudas hunt in couples, so that one fish supplements the destruction which the other begins. But when their prey is found in schools they sometimes assemble in large numbers, engaging in a saturnalia of killing.

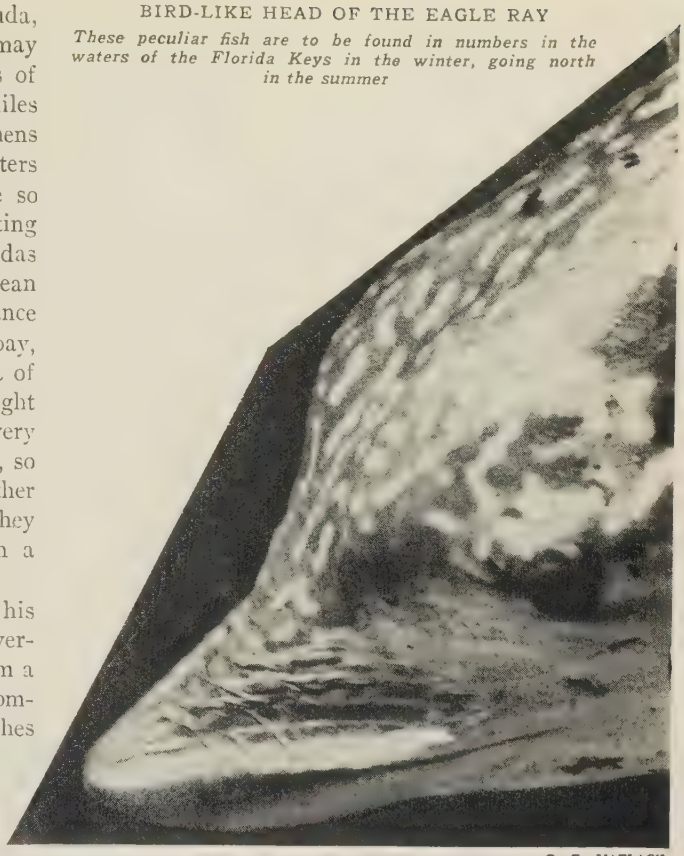
The barracuda is a really beautiful fish despite his clearly ferocious appearance. His greyish back is overlaid with reticulated greenish patterns which give him a serpentine look when his powerful rounded and compressed body is beheld beneath the waves as he rushes to the surface to attack a fish which you have upon your line. Not until he is almost at the top do you perceive the great brown splotches upon his body. His belly as he leaps from the waves, as he often does when first hooked, flashes as a silver screen, though at the dock a few hours later the whole fish has become a drab gray thing. Seen in profile the barracuda much resembles a muskellunge, but his great snout is pointed and undershot like an old trout. His big head, occupying one-fourth of the length of the entire body, contains an enormous maw armed with sharp-cutting canine teeth and further back by hedgerows of inward pointing smaller teeth which fit into grooves. The power of his jaws is so great that I once saw a barracuda scatter his teeth all over the cockpit of a boat when he bit on a chisel with which the fisherman was trying to pry out the hook.

Often on the ocean reefs off the Florida coast I have gazed through the crystal clear waters and within the course of a half hour beheld amberjacks, barracudas, blue runners, parrot fish, permits, groupers, and dozens of

(Continued on page 380)

BIRD-LIKE HEAD OF THE EAGLE RAY

These peculiar fish are to be found in numbers in the waters of the Florida Keys in the winter, going north in the summer

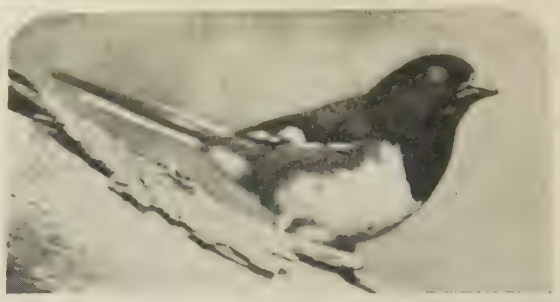


C. C. MATLACK

(Below) MULLET IN NUMBERS NEAR MIAMI

A barracuda delights in a saturnalia in a school like this. Man also likes these fish for their food qualities

(Left) The blossom of the tung oil tree, which offers the promise of a profitable industry in the northern part of the Everglade State



DR. A. A. ALLEN

The white-eyed towhee, a characteristic and interesting Florida bird

The Seminole Indians are, of course, synonymous with Florida. Here are a mother and child at the Musa Isle village near Coral Gables. Each necklace represents an event in her life. This woman's life has apparently been far from drab and monotonous

PUBLISHER'S PHOTO SERVICE

What it meant to build the Tamiami Trail. Constructing railroad, highway and drainage canal through the big cypress swamps of Collier County

This thatched cottage in the shade of a lovely live oak is in the automobile tourist camp near Tampa, —here's comfort indeed!

W. M. BUSWELL

A winter afternoon idyll at Lake Ivanhoe, only one of the many lovely lakes for which Florida's inland is noted everywhere

"All done! Well done!" said the Governor of Florida on the completion of the Tamiami Trail from East Coast to the West Coast of Florida

THE GUAVA TREE, AND ONE SPRAY OF ITS FRUIT
This fruit is prized and popular in jellies although the tree is not particularly attractive and the odor of the fruit offensive

Strange Are Thy Fruits

Interesting Sub-tropical Delicacies Grown in Florida

by Gerry Swinehart

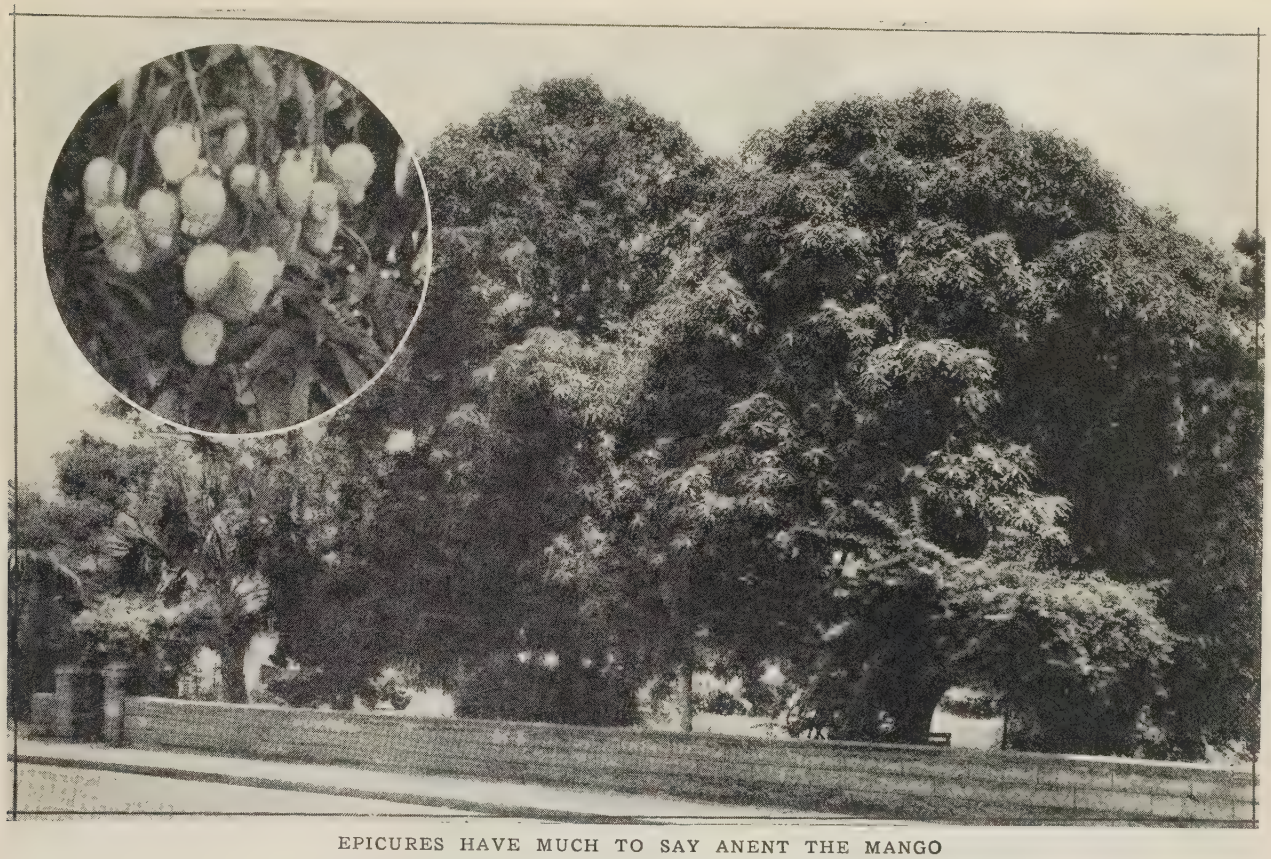
STRANGE as may be the flowers, vines and trees of sub-tropical America, even stranger are the fruits peculiar to that section. Some, of course, such as the citrus fruits and pineapples, have become common through usage and commercial exploitation. There are, however, others much more notable as delicacies. One, said to be the highest priced fruit on the New York market, is high in food value, so full of butter-fat it has been called "midshipman's butter"; another is at once the sweetest and yet the sourest fruit known; a third tastes like a cross between banana and strawberry; nearly all are excellent material for jellies and preserves.

Stranger, indeed, than fiction to those who long have known their apples and gooseberries, peaches, plums and pears, are these strange species of the tropics and sub-tropics, ornamental as well as utilitarian; providing a fairyland of fruits and flowers about the estate and home; as popular on the front terraces as in the rear, and maybe more so.

Probably the most widely known and most popular of these odd fruits is the avocado or alligator pear, the "midshipman's butter." It is not only for the cultured palate, but is by far the most nutritious fruit grown, with the exception of nuts. The meat is yellow near the center, shading outward to green. It has a delicate nutty flavor and can be eaten with only a little salt as a vegetable, or with cream or wine and sugar. Its most popular rôle, perhaps, is in salad, but it can also be spread on bread or wafers like butter.

Avocados are available in a number of varieties from August and September on through to the first of the year. The tree, clean and rather attractive, often growing to be from thirty to fifty feet high, is a native of Mexico, Central America and the mountains of Colombia. Thus, there are three main branches of the family, but the common, or West Indian avocado, extensively grown in south Florida, is the most tropical and bears the largest fruit. This fruit is covered with a leathery skin, which, when ripe, is green or, in some instances, a shade toward purple.

Although the avocado is probably more widely known the epicure may favor the mango, often called "the finest all-around fruit of the tropics". Geographically and botanically, the mango is a far cry from the avocado. The mango is a native of the land of Buddha and

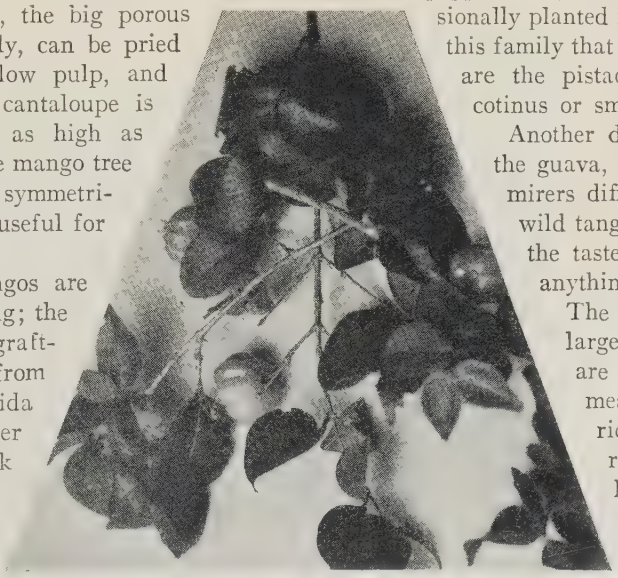


EPICURES HAVE MUCH TO SAY ANENT THE MANGO
The tree, a cousin of the poison ivy, is handsome and a useful shade tree, while the fruit has a variety of uses in many homes

Brahma . . . of hot, mysterious India many miles away.

Commercially, the mango is no doubt best known in the rôle of "chutney", a hot, sweet, East Indian preserve, as old as record but ever popular in all the principal market places of the world. But the mango has other uses and in these too, it glories in tastiness. Mangos, green, are used in pies and in a variety of other preserves. Mangos, ripe, are used in ice cream much like peaches, cherries and other fruits. And finally, they are eaten melon fashion. If the fruit is cut completely round, end for end, the big porous seed, usually clinging closely, can be pried loose from the golden yellow pulp, and the mango served just as cantaloupe is served. Standing oft-times as high as sixty and a hundred feet, the mango tree is beautifully spreading and symmetrical, with large green leaves useful for shade.

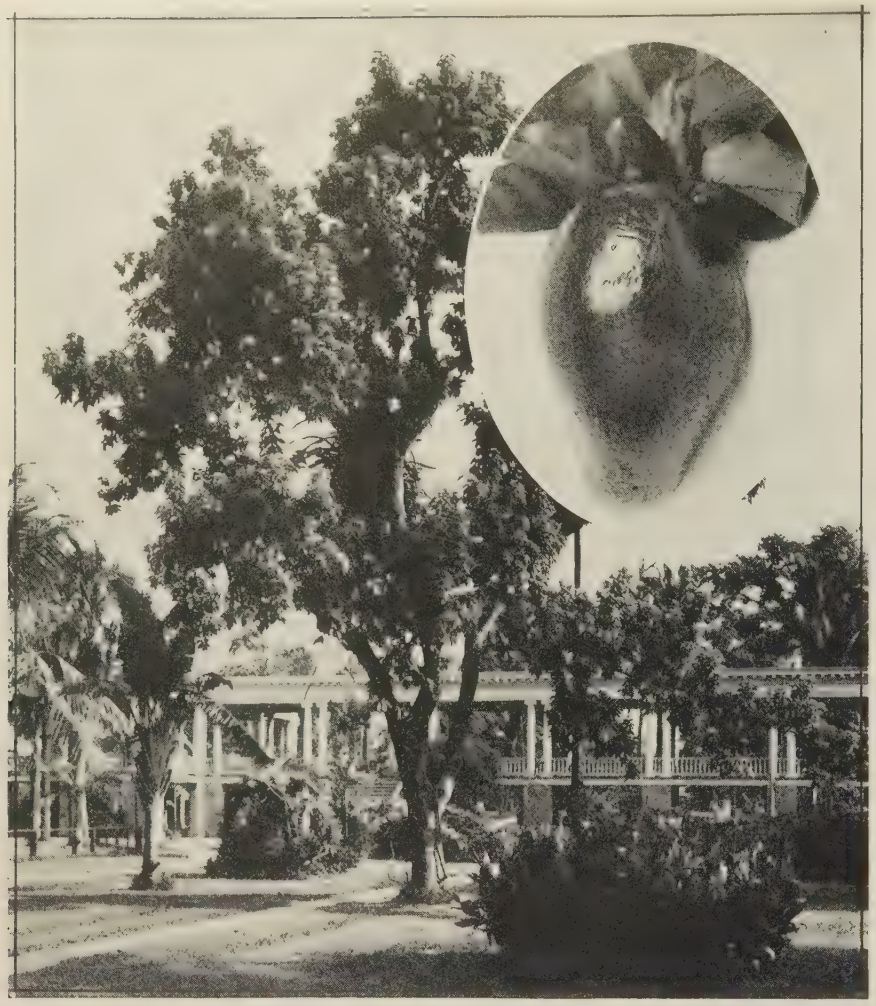
Among the popular mangos are the Haden, a Florida seedling; the Amini, Rajah and Mulgoba, grafted fruits brought directly from India; and the Cecil, a Florida seedling developed on the lower east coast from Philippine stock brought to Mexico and thence to Florida. The fruits vary in weight from six ounces to two pounds, according to their several species, and range in color from gorgeous yellows, greens and orange, to yellows and pink and yellows and crimsons. In certain of the less desired varieties, a taste of turpentine is sometimes present, but in the highly selective species the tender and yet slightly fibrous pulp is most juicy and delicious, tasting between cantaloupe and a luscious peach. The mango is a member of the cashew family, and a cousin to the notorious poison ivy as well as to the beautiful pepper tree, *Schinus molle,* planted in California, and the Brazilian pepper tree, *Schinus terebinthifolius,* occasionally planted in Florida. Other members of this family that have long been in cultivation are the pistachio, cashew, spondias and cotinus or smoke-tree.



THE SURINAM CHERRY, A HANDSOME FRUIT
The tree is attractive and the cherries popular in jelly and as a tonic

Another delicacy of the far South is the guava, famed in jelly form. Its admirers differ in striving to classify its wild tang or strain, but the guava has the taste of apple more nearly than anything else.

The guava tree, although its large, apple-like white blossoms are beautiful, is not by any means a handsome or symmetrical tree and because of the rather sickening odor of the lemon-sized pale yellow fruit, is not popular in landscape schemes. The guava tree will rarely average over twenty-five feet in height and its life-span will be well run



THE POPULAR AVOCADO TREE AND ONE OF THE FRUITS

(Below) Pineapple plantation, an industry which gives promise of rejuvenation in Florida

out in a twenty-five year period. The guava is a seed tree and probably was introduced to this section by birds. The large, hard, indigestible seeds are unique in that even after the most incessant boiling, they still will sprout and take root.

Another excellent jelly and preserve stock is to be found in the handsome Surinam cherry, a fruit of delicious aromatic flavor, resembling the strawberry somewhat in size and shape, but having a ribbed or corrugated surface of smooth glossy segments. This tree, strictly tropical, is clean, symmetrical and bears a solid foliage. Its spicy cherries, also eaten raw as a tonic, are borne heavily in April and May of the year.

From the tropical veins of the sapodilla comes much of the chicle used in the manufacture of chewing gum. In its native tropical America and South America, it is found in great forests. In south Florida the sapodilla tree is prized chiefly for its evergreen symmetry, its accommodating shade, and for its sweet, juicy fruit. This fruit, russet-brown in color, containing black glossy seeds about three times the size of watermelon seeds, has a brownish, yellow pulp something akin to the ordinary pear in consistency. It is generally about the size of a small lime, and conical in shape, but in selected stocks grows to be large and round.

The foliage is thick, the wood is reddish in color, hard and durable, and the tree grows to thirty or forty feet

At once the most acid and yet the most sugary fruit known, the tamarind, today sold as a delicacy on the New York market, half a century ago was playing the rôle of lifesaver to seamen who plied the main in clipper ships. In those days of scurvy, so the story goes, a vessel would no more leave port without an ample supply of tamarinds, than set sail without its rudder. The juice of the fruit was carried as one of the most efficacious preventatives then known for scurvy.

The fruit is a thick fleshy pod from three to five inches long, about an inch wide, one-half inch thick, and resembling the locust. These pods hold a number of large, hard beans. Inside is a mass somewhat resembling molasses candy. This substance, when put in a jar and covered with granulated sugar, forms a thick acid syrup. When mixed with water, a drink of surprising

medicinal value and palatability is produced.

Although the tamarind has been growing wild in south Florida since before the beginning of civilization in that region, and although it no doubt originally was native to East India, it probably found its way to this country from the West Indies. Both the leaves and flowers of the tamarind are eaten in India and are also used as mordants in dyeing.

The tamarind today is one of the best known of tropical fruits and there are those who recall family stories which would place the species on the New York market as long as one hundred years ago. The tree is of hard yellowish wood, and it bears pinnate and red-striped yellow flowers the year around.

Perhaps appropriately, the ceriman is known by so awe-inspiring a name as *Monstera deliciosa*. It might be called by a long fetch of the imagination, the policeman of the tropical fruit kingdom, for it grows a billy-club shaped offering of unusual distinction. If you can imagine biting into a banana of the consistency of pineapple pulp and as succulent, growing high on a climbing shrub, and tasting as much like strawberry as banana, then you can imagine the ceriman.

The ceriman grows luxuriously and easily and with only a modicum of cultivation, or none. It is a green-stalked climber, its fruit made still more distinctive by the hexagonal scorings covering its surface. This skin is green. When it ripens it peels off in small hexagons, exposing beneath small hexagonal kernels. Apart from the fruit, the ceriman is unique because of the strange beauty of its huge two-foot leaves, figured with what appear to be cut-outs of geometric design, and for the lovely fragrance and charm of its blossoms. These gorgeous flowers resemble the calla lily in a general way. The ceriman, stranger yet, requires fourteen months to ripen, usually presenting fruit in August and September. It is a prolific climber and will entwine itself on tree trunks as high as fifty and sixty feet from the ground.

CERIMAN, POLICEMAN OF THE TROPICAL KINGDOM

(Below) The attractive tree on which grows the tamarind, most acid yet sugary fruit

Unique also, even in such company, is the Japanese loquat —differing from most of these species in that it is natively subtropical. It is marked particularly by its long, dark green corrugated and serrated leaves which, with its pretty clusters of oval, orange-colored fruit, lend it ornamental charm. It blooms in fall, sending forth large clusters of fragrant white blossoms which become mature clusters of sub-acid fruit in March and April. The pulp of this plum-sized fruit is crisp and refreshing and is relished raw although

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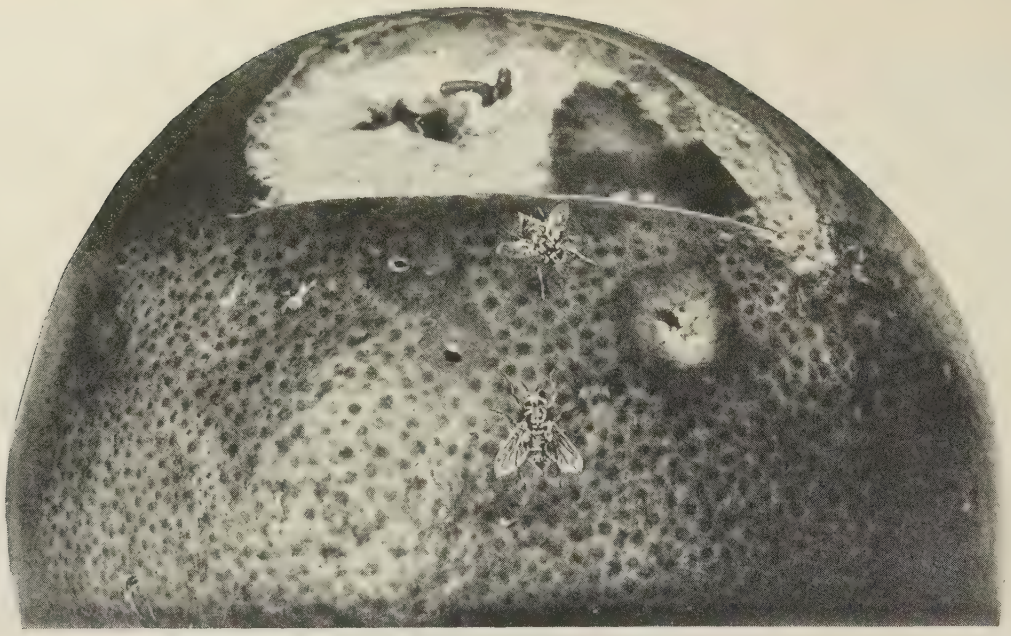


FRUIT FLY GETTING ITS WORK DONE ON A GRAPE-FRUIT

Top of the fruit cut open to show the adult flies and the depredations of their larvae. Below is the culprit itself, enlarged

Conquering *the* Fruit Fly

Quick and Drastic Action Saving Florida's Citrus Industry

by Otto Wilson

"What is all this talk about a new fruit fly in Florida, anyway? How dangerous is it? What chance is there that it will wipe out the oranges and grapefruit down there entirely? How can it be checked, if there is any way of checking it at all?"

Across the mind of many a lover of Florida's delicious thin-skinned citrus fruits flitted questions something like those last spring. The newspaper stories held alarming implications. They told of swift quarantines, of drastic destruction of carloads of fruit, of a mobilizing of state and federal forces to combat the new danger. Then as time passed and the steady flow of fruit continued most of the public no doubt passed the matter off as just another scare, with probably nothing much to it after all.

But there was, and is, a great deal to it. For a few intensive weeks in the spring and early summer a grim little war was carried on in the sunshiny peninsula, on the outcome of which the prosperity of hundreds of thousands of Americans depended. And for a while no one could tell whether it was likely to be won or not. It is in fact still going on. But the situation is vastly more hopeful now than it appeared last spring it was likely to be.

The villain of the piece is of course the fly known everywhere as the Mediterranean fruit fly. The learned men have given it a Latin name that does indeed go trippingly on the tongue, *Ceratitis capitata*. Caught in the nick of time, the invading hosts of this new insect, just ready to sweep devastatingly forward over all our southern and western states, have been definitely stopped. The areas to which they have spread, it seems, have been well hunted out. Within those known areas the fly has been so thoroughly eradicated that it is almost never seen, while vigilant eyes keep watch for any sign of an outbreak in new

regions. If the war is not yet ended at least we can say that gratifying progress has been made.

What a sharp drama has been enacted back of the silence which, for the public at large, followed the first waves of alarm that thrilled out across the country! It is one more of those modern dramas at which the scientist looks on from a privileged seat, watching the contending forces with an absorbing interest possible only to the well informed. In the present case none but the trained entomologist could fully appreciate the play of dramatic elements involved.

ORANGE INJURED BY THE FRUIT FLY

Each black spot shows a place where the fruit has been punctured and eggs laid. Decay begins

The Mediterranean fruit fly comes close to being the most dangerous of all the world's insect pests to our fruit-growing industry. Up to last spring the United States alone of all the commercial citrus-growing lands was still free from it. For long years it has waited just outside our doors, both on the east and on the west, kept at bay only by rigorous quarantine measures at our ports. Once allowed to spread it would, in the conservative words of the experts, "bring chaos to many agricultural regions of the South and West," destroying the livelihood of wide sections of our population and forcing the expenditure of untold sums for eradication or control.

For fully a century it had been doing these things to the sub-tropical countries of the earth. Arising probably in East Africa it had made its deliberate way from one great land body to another, greatly aided in its wanderings by the growth of shipping facilities on ocean vessels. From Mediterranean shores it had reached out to the Azores, whose fruits first brought it to the attention of the scientific world. Forty years ago it had established itself in South Africa. Within the next decade it had discovered Australia. Borne on one of the endless cross currents of ocean trade it had slipped quietly into Brazil by the close of the last century. Later it was found elsewhere in South America, and at intervals one after another of many other regions of the earth reported its arrival.

Nothing but pure luck kept it from planting itself in North America before the quarantine service was ready to watch out for it. On the Atlantic side Bermuda had been invaded more than half a century ago through the medium, it is said, of the cargo of a ship making for New York but blown off its course by a storm. But it was the threat from the Pacific side which first brought our fruit growers up standing. In May, 1910, the fly was found in Hawaii. Presumably it had made the big jump from Australia as a stowaway in a vessel carrying fruit among the ship's supplies. Before many years it had just about ruined the commercial possibilities of a promising fruit industry in the islands. California and the federal government lost no time in clapping on a rigid quarantine against all fruits from the islands that were host to the fly, and they have maintained it rigorously ever since.

So the threat of the

THE FLY HAS HARVESTED THIS CROP

Scene in a badly infested citrus orchard although only a very few groves suffered as severely as this

world-pest was well understood when in April of this year an announcement from Washington sent a shiver of fear through the informed personnel of the citrus belts east and west. From a citrus grove at Orlando, Florida, a piece of grapefruit containing suspicious looking larvae had been rushed by air mail to the Department of Agriculture in Washington. A quick examination left no doubt as to the identity of the little white larvae. At last the dreaded enemy was within our gates! Quickly the modern tocsin of clicking telegraph keys was sounded throughout the country. Fortunately a plan of campaign had already been prepared for such a crisis, based on careful studies made by Department agents in Hawaii. Florida at once released a $50,000 emergency fund and $40,000 more was transferred from other work by the federal government for immediate use. California, instantly on the alert, sent urgent wires to its Congressmen calling for the fullest support in mobilizing federal aid. On the recommendation of Secretary Hyde Congress pushed through a special appropriation of $4,250,000 for eradication and control. All available personnel was set at once to work. Florida and the national government threw their scientific experts into the campaign, motor trucks were borrowed from other states, a part of the National Guard was called out, and the war was on.

WHAT THE LARVA HAS DONE
A fruit effectively and completely devoured by the pest in Hawaii

It was decided to attempt to stamp the pest out entirely rather than merely to control it. That was indeed no job for a summer's holiday. For the adult female fly lives for months and may lay as many as five hundred or six hundred eggs. Deposited in a tiny hole made in the skin of almost any kind of fruit or of several different kinds of vegetables, these eggs soon hatch out into larvae which feed on the pulp a while, drop to the ground, burrow into the soil, and change into the pupae, from which in due course the fly emerges to begin another life-round. The whole cycle may take place in as short a time as fifteen days, although cool temperatures may prolong it for months. So, even though most of the eggs die, it takes no mathematician to appreciate how fast the flies may multiply and what a labor of Hercules it would be to kill them all.

But the weak place in the fly's armor is labeled "Food". It must eat straight along or it soon joins the shades of its multitudinous ancestors. A three or four days fast kills it. So the Florida campaigners proposed to reduce the enemy by starving it to death. Strange sights were presently seen in the citrus groves, in vegetable gardens, in the back yards where isolated fruit trees grew. Laborers were busy stripping all fruit from the trees, green or ripe, large or small. Trucks came and carried it to long pits in the ground, into which it was unceremoniously dumped, covered with quicklime and oil, and buried under three feet or more of earth. Wherever the fruit fly was found trees and ground for a mile around in all directions were cleaned so thoroughly of host-fruits that you would never have known you were in a fruit country. And then for nine miles beyond that no fruit might be sent away except after careful inspection.

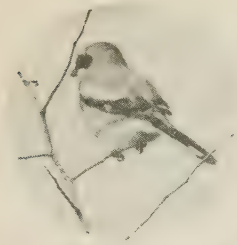
On all the roads and rivers leading out from the infested areas National Guardsmen sworn in as deputy inspectors searched every automobile, motor truck, boat, or other vehicle for forbidden fruit, and sprayed them against the fly itself. And the deadline held for inbound traffic as well. Not an apple or a peach was allowed to pass by. Only such products as pineapples or watermelons might pass freely, as they were not on the diet list of the visitor from across the water.

LIKE A DEFLATED FOOTBALL, THIS HAWAIIAN PEAR
The inside of the fruit has been eaten out, leaving only the skin. Thus they work

While this starvation program was progressing in regions of known infestation, trained inspectors were ranging far and wide over the state, searching for possible new *foci*. Scouts went ahead, examining particularly citrus groves where much fruit had fallen and sending in any pieces that looked suspicious. Squads of inspectors followed, raking the countryside with a fine-toothed comb. Many new infestations were uncovered but most of them were recent and confined to narrow limits.

And the plan worked. At the outset in April flies were thick in infested areas, as of course larvae and pupae were also. In mid-July a committee of experts was able to report that it was difficult to find a fly at any stage of its life-cycle. Altogether, over the first three months of the campaign, 982 properties were found to be in-

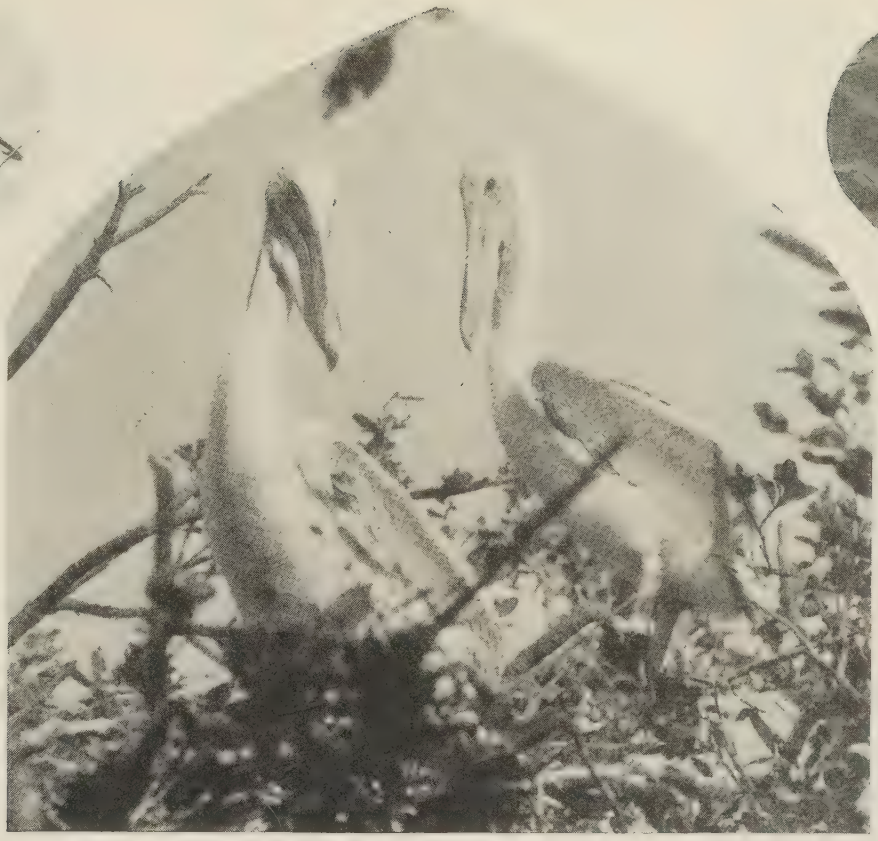
(Continued on page 381)



H. H. SCHRODER

THE LOGGERHEAD SHRIKE POSES

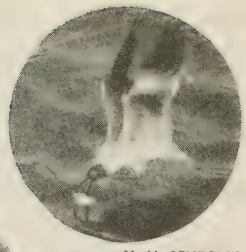
Rather a common bird in Florida



H. ARMSTRONG ROBERTS

AT THE PELICAN ISLAND ROOKERY

After nesting for many years near Sebastian, the pelicans suddenly moved their rookery about sixty miles to the north



H. H. SCHRODER

LAUGHING GULL IN TAMPA BAY

Picking up food from the water

FLORIDA—MECCA of the BIRD LOVER

by R. J. Longstreet

FIFTY years ago, Florida lakes, rivers, prairies and swamps teemed with a wonderful multitude of beautiful birds. Magnificent egrets whitened the landscape. Gorgeous spoonbills were common along the coasts. Charming little paroquets climbed about the moss-draped live-oaks. Least terns, beautiful swallows of the sea, were breeding in abundance. According to reports dating from those days, shore birds and water fowl migrated to the state in winter in numbers that now seem almost unbelievable.

Florida became the most popular hunting ground of the East. There were no game laws and no game wardens and only a sparse population of natives with little or no interest in local bird life. The plume hunters found in Florida their chief supply of aigrettes and other feathers demanded by the millinery trade. Unchecked and wanton slaughter threatened to destroy the last vestige of some of the most beautiful birds of the State.

When the National Association of Audubon Societies and the Florida Audubon Society began their efforts to save the remnant, wardens were as unpopular as revenue officers in Tennessee mountains. At least one brave warden, Guy Bradley, laid down his own life in the protection of Florida's birds. The Legislature came tardily to the rescue of its feathered citizens; it was not until 1925 that a game commission was created. But today, under protection and an enlightened public conscience, Florida's birds are now re-establishing themselves, and the glory of Florida—its wild birds—has been saved.

S. A. GRIMES

FOUR HUNGRY LITTLE PINE WARBLERS

To say nothing of the mother bird with work to do

Florida is unique among the States in

H. H. SCHRODER

A MALE SANDHILL CRANE IN LEE COUNTY

This bird is common on the prairies in central and southern Florida

many respects, but in none more than in its ornithology. Florida is more than a political subdivision of the United States. It is a geographical division of North America. The long peninsula extends some four hundred miles southwards into the warm waters of the Gulf and towards the West Indies. With its thousand miles of coast, thousands of lakes, the immense Everglades, palm-fringed islands and tropical verdure, Florida is a land different from the remainder of the continent to which it is attached. The bird life of the peninsula has felt the impress of its geography. As a result, Florida bird life has characteristics not shared by any other state or division of the United States. Some of these deserve special mention.

S. A. GRIMES

THE MOCKINGBIRD

America's most famous songster

Among these characteristics are the isolated forms peculiar to the State; a large variety of local races, known as subspecies, which probably are new species in the making; the final retreat of birds once breeding over a much wider range; the occurrence of a few tropical birds; an unusual proportion of water birds, and enormous rookeries of some aquatic forms; abundance in winter of many common northern birds. These are the principal features of the uniqueness of Florida bird life.

Perhaps nothing indicates this peculiar biologic character more than the long series of subspecies named for Florida. We do not have Indiana bluebirds nor New York cardinals nor Michigan towhees. But we do have such forms as the Florida duck, Florida cormorant, Florida clapper rail, Florida burrowing owl, Florida quail, Florida towhee, Florida blue jay, Florida grackle, Florida yellow-throat, Florida wren, Florida chickadee, and others not named. Some of the subspecies named for Florida range beyond the state. Other subspecies, although not named for Florida, are found only in the peninsula.

The Florida burrowing owl is an especially interesting case. Its range is restricted to the prairie region of central and south Florida. But in the western part of North America the burrowing owl is a wide-ranging species. The isolation of a form of this bird in a limited section of Florida, and its entire absence in all the territory between south Florida and the West, constitute a nice ornithological problem.

The case of the Florida jay is somewhat similar to that of the little ground owl. On the Pacific coast occurs a bird of the same genus, *Aphelocoma,* but in all the intervening country this group is entirely unrepresented. Probably the jays and the owls each once had common ancestors and extended across the continent. In Florida, the "scrub jay", as it is frequently called, is found only in the peninsular part of the state and most commonly along the coasts. The Florida jay is a distinct species and Florida is the only place to see it.

Another distinct species, restricted to Florida, is the dusky seaside sparrow. This little finch, discovered by Charles J. Maynard (one of the pioneers in Florida ornithology), enjoys the most limited range of any bird known in the state. It occurs in the salt marshes at the north end of the Indian River, on Merritt's Island.

H. H. SCHRODER

(Above)

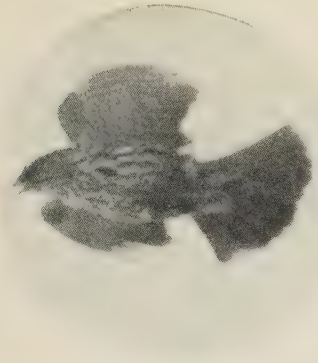
YOUNG BURROWING OWLS NEAR FORT MYERS

Florida has an exclusive species of this wide-ranging group

H. K. JOB

LOUISIANA HERON AT ITS NEST

One of several herons to be found in Florida



H. H. SCHRODER

RED-WINGED BLACKBIRD
Female bird caught in full flight

In 1918, A. H. Howell took specimens near Cape Sable that proved to be a second new species of seaside sparrow, and which has been named the Cape Sable sparrow. Howell writes that "probably its range is confined to the coastal marshes in the vicinity of Cape Sable."

Not only are many common North American birds represented in Florida by slightly changed forms, recognized as subspecies, but in some cases a single species occurs in several forms. This is true in the case of the long-billed marsh wren and the red-winged blackbird. Howell recognizes four forms of the red-wing in the State. The eastern red-wing is found from Gainesville northward. The gulf-coast red-wing breeds on the gulf coast from Choctawhatchee Bay westward. The Florida red-wing covers most of the peninsula. And Maynard's red-wing breeds from the keys northward to Palm Beach and Chokoloskee.

Florida, placed as it is so near the tropics, and its southern tip being actually in the tropic zone, includes in its avifauna tropical birds not found elsewhere in North America. The frigate bird, most magnificent in flight of all American birds, is found at all seasons along the southern coasts. The scarlet flamingo may be seen in the Cape Sable region, and rarely, farther to the north. Several West Indian doves have been taken at Key West, and on other nearby keys. The booby occurs along the southern coasts, and occasionally a yellow-billed tropic bird has been seen. A few tropical species have extended their breeding range to Florida. On the Tortugas is the only breeding place in North America of the noddy and the sooty terns.

The great white heron breeds in extreme southern Florida. It was discovered by Audubon near Key West in 1832. Associated with this handsome heron is a peculiar hybrid, a cross between it and the Florida form of the great blue heron. The only place in North America to find glossy ibises breeding is in Florida. The everglade kite, strange snail-eating hawk, inhabits the marshy tracts of central Florida. The short-tailed hawk, first found nesting in the United States at St. Marks, Florida, by Charles J. Pennock, has since been located at several places in the State as a breeding bird. Audubon's caracara, strange cross between a hawk and a vulture, is common in the wind-swept prairie regions of central Florida.

There are several birds once found over a wider range and now almost solely to be found in this State. The sandhill crane is common on the prairies of central and south Florida, and nowhere else in eastern United States, except a few places in Alabama and Louisiana. Limpkins, those awkward, giant rail-like birds, occur sparingly in the great Okefinokee swamp in southern Georgia, but are found in numbers only in certain parts of the Florida interior. The roseate spoonbill was once a common breeding bird in the State. But the millinery trade all but destroyed the last of these magnificent waders.

The ivory-billed woodpecker, king of its tribe, inhabiting the great cypress swamps, probably is making its last stand

S. A. GRIMES

GROUND DOVE ON HER NEST
Several West Indian doves, birds of the tropics, have also been found in Florida

S. A. GRIMES

(Above)
AMERICAN BITTERN STICKS TO HER NEST
Striking pose of this most interesting bird

SNOWY EGRET SHOWING ITS PLUMES
Persecution long followed this bird

H. K. JOB

H. H. SCHRODER

GRAY KINGBIRD

W. L. DAWSON

FLORIDA REDWING

W. L. DAWSON

WOOD IBIS COLONIES WITH CORMORANTS ALSO IN TREE

There are many rookeries where these and other water birds gather in great numbers in the trees

in Florida. The last breeding record of this giant woodpecker was made by Dr. A. A. Allen, who found a pair nesting in central Florida in 1924. It is now against the law to kill this fine bird, but perhaps the protection has come too late.

The last stand of the Carolina paroquet was made in Florida. This beautiful little parrot was once abundant but was shot and trapped in such quantities and so persistently that not one has been seen for many years. The bird is now undoubtedly extinct.

Added interest in Florida ornithology lies in the presence in the state of several famous rookeries. Perhaps none is better known than "Pelican Island". Strangely, however, the brown pelicans that for upwards of a century gathered each fall to nest in thousands on the little island near Sebastian, in the Indian River, suddenly abandoned their ancestral home and moved northwards about sixty miles to establish a new colony at the southern end of Mosquito Lagoon. Most of our knowledge of the home life of the brown pelican has been secured from studies of this famous east coast colony. It is interesting to note that the pelicans of the gulf coast breed in the spring, like most other birds, but the east coast pelicans begin nesting operations in early fall.

Another great rookery is at Lake Cuthbert, in the Cape Sable region, where not only a few spoonbills still persist, but a variety of other species of water birds congregate in vast numbers. A. C. Bent describes this rookery in these words—"The taller trees . . . were dotted with the great, white American egrets, perhaps three hundred or four hundred of them, watching us from points of vantage; on the mangroves below them, among the hundreds of white ibises, we could see seventy-five or a hundred of the rare roseate spoonbills; the outer edges of the mangroves, growing in the water, were black with Florida cormorants and anhingas; and everywhere were flocks and clouds of Louisiana and little blue herons. . . . Then hundreds of white

(Continued on page 381)

BIRDS OF THE WATERS

Below, a Cabot tern, and to the right, willet and black-necked stilt

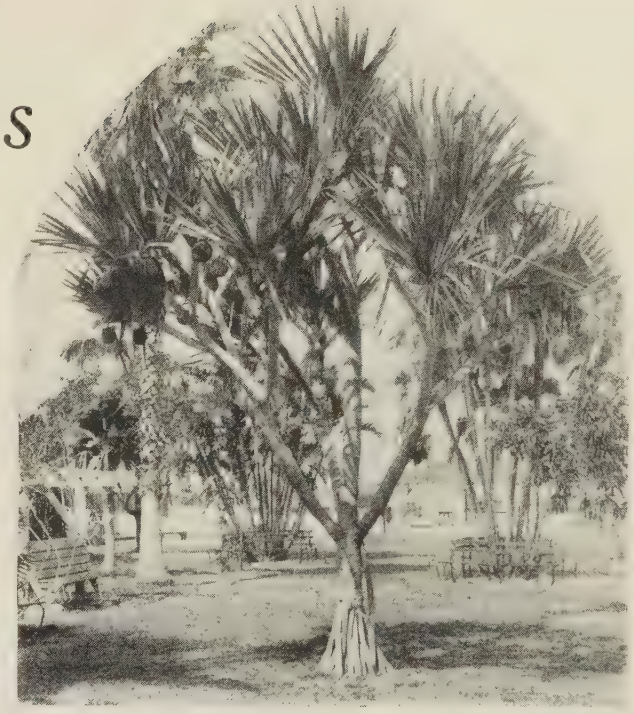
THE BONAPARTE GULL

With her many miles of coast line Florida is rich in such birds

Florida's Trees

Many Interesting Cultivated Trees

by
Nellie I. Stevenson



H. H. SCHRODER

THE SCREW-PINE, FAVORITE ORNAMENTAL
Note the stilt-like aerial roots and the leaves arranged in spirals

SOME people go to Florida for pleasure, some for health, some for wealth, but all persons who have a flair for the study of trees discover the peninsula to be an enticing field for research, because of its vast array of arboreal immigrants, with ancestral lines converging from all far, warm corners of the earth. With its location and its climate Florida invites many tender plants which are not generally believed to thrive except under strictly tropical conditions. There are, then, such trees as the royal poinciana of Madagascar; the woman's-tongue-tree, *Albizzia,* closely related to the acacia; the famous banyan from India; the fan-like traveler's-tree, a precisely-formed yet bold looking first cousin of the well known banana. Not only are there numberless strange plants already established here, but there is also a constant stream of new importations arriving from distant shores.

Not all of Florida's introduced trees are little known, since many are found growing also in other gulf states and the Southwest. Among these are the eucalypts, the chinaberry or umbrella tree, camphor, the jacaranda from Brazil, the acacias, *Bauhinia* or mountain ebony, Australian silk oak, loquat, the hardy Canary Island date palm, and the oleander, which attains tree-like proportions in Florida. The *Casuarina* or beefwood was once freely planted as an avenue tree. It is best known as the Australian pine, although not a conifer, and in its native country is sometimes called mile-high-tree on account of its rapid growth.

Florida has a wealth of native material, also, for garden and roadside planting. Pensacola's wide spreading live oaks are the most impressive part of her urban landscapes, and other cities in the state have these trees of age-old beauty, besides transplanted holly, laurel oaks, magnolias, and fragrant-leaved bay trees. First visitors to Florida often mistake the magnolias for rubber trees, because of the similar thick, glossy leaves. But the broad-leaved rubber plants from Asia are not found in Florida, nor do they display the wonderful waxen flower cups of the southern magnolias when springtime reigns.

In this land where a perpetually green flora predominates, the tropical almond, *Terminalia catappa* from the East Indies furnishes brilliant fall coloring. And when the earliest arriving winter tourist enters Florida the star-like foliage of the native sweet gum is yet in evidence. Later on, its dangling spherical seed baskets, retained long after the leaves are shed, almost intrigue a stranger into the belief that he has discovered a foreign relative of the sycamore, which at this same season swings its own tighter-formed seed balls over wood and garden.

Two distinctive Old World trees are the tamarind and the rose-apple, the latter related to the eucalypts as may be suspected from its narrow, shining leaf and floral pompons of long white stamens. The small round fruit is rose flushed, rose scented, and makes excellent sauce or jelly. The tamarind is an imported cousin of the locust tree, with soft graceful foliage and a heavy crop of thick sub-acid pods that are said to be eaten with fish and greens in India, or more commonly used in warmer climes to make a pleasant drink somewhat similar to lemonade.

A sea grape, *Coccoloba,* grows abundantly along the shores of southern Florida, the purplish fruits forming grape-like clusters and making a delicious jelly. This small tree is frequently cultivated in gardens.

Many of our exotic ornamentals have been a known source of useful oils and a number of these trees are to be seen in Florida, although one only, the tung-oil, is grown commercially. The cajuput or paper-bark tree, *Melaleuca leucadendron* of Australia and southern Asia, is close kin to the eucalyptus, and a source of a volatile oil of medicinal value. The spongy bark of the trunk, which may be pulled off in thick sheets, is used to make life preservers and, when ground, is employed like cork for packing fruits. Through its name the horse-radish tree, *Moringa oleifera,* advertises an Asiatic use of its pod and root as a condiment with meats. Undoubtedly it is little known in the United States as the important source of ben-oil, a

valuable lubricant for watches and aeroplane engines.

A large tree from India, the Alexandrian laurel, *Calophyllum inophyllum,* is notable for its glossy, beautifully-veined leaves and fragrant flowers which look as if made of white kid. From the bark is obtained a commercial gum and the seeds furnish a bitter green product known in Europe as Pinnay or Domba oil, valued for burning and as an external remedy for rheumatism. This tree has not attained full size in Florida, but a related species from the West Indies, *Calophyllum calaba,* may be seen among the newer plantings of Miami's public parks.

One tree quite out of the ordinary in Florida is the muchukunda, one of the *Pterospermums* of India, a lone survival of the many rare plants once cultivated in the Bishop's Garden in what is now the central section of Orlando. It has extremely large, commonly one-sided leaves borne at an angle suggesting the "lampshade" effect of a lovely relative, the pink ball, *Dombeya wallichi* from Madagascar. The bishop's tree seems a bit less of a foreigner when we discover that it belongs to the same family as the cacao, from which commercial cocoa and chocolate are made.

The catalpa is sometimes planted in Florida, and there is also one indigenous species, but its exotic kin are more likely to attract the attention of visitors. Two curious relatives from Africa are the *Spathodea,* and the sausage tree, *Kigelia pinnata,* the latter being one of the most sacred trees of that dark continent. The fruit resembles a bologna sausage and the handsome, conspicuous, deep red flowers are somewhat unpleasantly scented and are borne on rope-like stalks which elongate rapidly as the fruit ripens. Canoes have been made from the extremely tough timber of the sausage tree, and its fruits were once valued medicinally by the African negroes.

FLA. STATE EXP. STATION

ONE OF THE MANY PALMS OF FLORIDA

The India or wild date palm which is one of many introduced members of this family

Palms are to be expected in Florida, and the state boasts among its native trees two of the most famous palms in the world —the royal and the coconut. While it is true that the royal palm, *Roystonea regia,* is fast disappearing from its natural habitat and is not to be seen in its primitive grandeur save in certain sections of the Everglades, this regal tree has most fortunately been generously planted in towns and cities of southern Florida. The coconut palm, *Cocos nucifera,* lends itself to landscape effects with greater naturalness than the royal and has the added advantage of easily becoming naturalized, — young trees springing up from nuts that have fallen from cultivated trees.

A tree immigrant from Porto Rico that is thriving well at the government plant introduction station near Miami, is one of the llume palms, *Aeria attenuata,* a familiar sight in the tropics on account of its unbelievably slender trunk (six inches in diameter) that is scarcely visible at a distance, and that therefore, causes the leafy tip to look like an immense green ball suspended in mid-air. This is a feather-leaved palm— as is the coconut and likewise the royal—but some of the fan-leaved palms that are native to the keys and to the extreme lower part of Florida are characterized by equally small stems, yet attain a height of twenty-five to fifty feet. The trees are also used in ornamental plantings. We are in-

W. A. MURRILL

THE BEAUTIFUL CAMPHOR TREE

This tree grows to attractive proportions both in size and in shape

debted to Charles Torrey Simpson for the correct identification of one of the most interesting of these Thrinax palms. Fruiting specimens from the native trees which were sent by Mr. Simpson to Arnold Arboretum in April, 1911, were forwarded to a palm expert at Florence, Italy, who pronounced this species to be *Thrinax wendlandiana,* not previously reported as grown farther north than Cuba.

In the bewildering array of palms cultivated in Florida may be seen the familiar *Washingtonias* of Mexico and California, in company with distinguished kin from southern Europe, China, Japan, and the Fiji Islands. But with all the wealth of an introduced flora there is to the true Nature lover an irresistible appeal in the thick forests of sabal or cabbage palmetto which are common throughout the entire peninsular section of the state. The natural basketry of leaf bases on the trunks of young trees, and the tall slender boles of older palmettoes give tropical aspect to southern towns when trimly planted as avenue trees, or more effectively cultivated in informal groups. For it is generally admitted that palms thrive amazingly well in Florida. In addition to the thirteen native species there are scores of immigrants from far countries, all of which constitute a prominent element in the widely varied and fascinating cultivated flora of Florida.

W. M. BUSWELL

TRAVELER'S TREE, COUSIN TO THE BANANA

(Below) The royal poinciana tree and in the inset its flower

With this picturesque and bizarre tree life covering the land, it is little wonder that both the traveler from the North and his southern cousin find much to marvel at in the Everglade state. Here, it seems, the temperate zone and the tropics have conspired to grow side by side some of the most beautiful arboreal specimens each affords. The Orient, Europe, Asia and India have likewise lent their best. Thus rich is Florida in her varied trees.

PUBLISHER'S PHOTO SERVICE

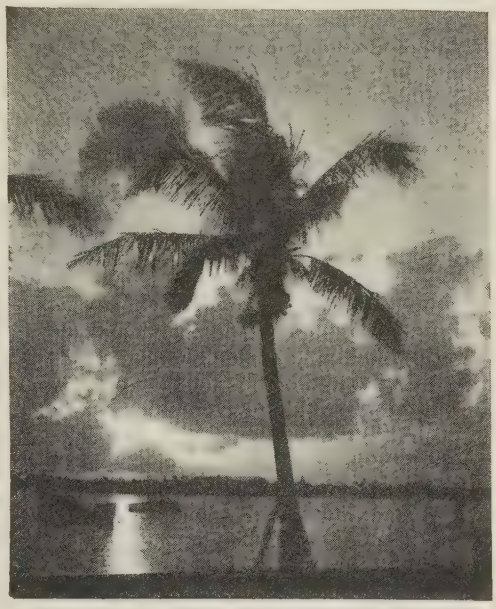
Fort Marion, the oldest and best preserved fortress in America, started in 1638 and built of shell rock. In it St. Augustine has one of the great historical relics in America

A. A. COULT

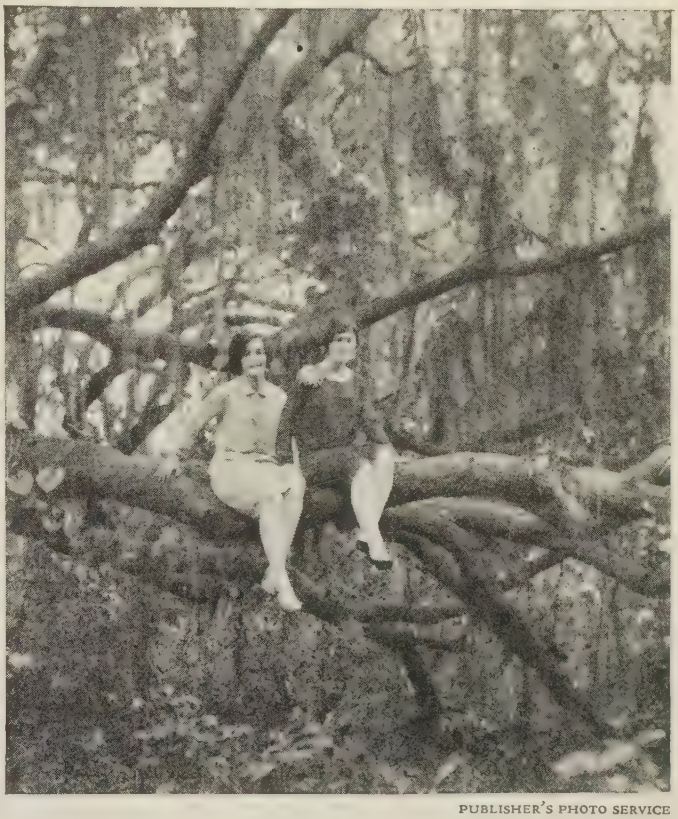
A flash of brilliant color by the roadside,—purple morning glories blooming along the trans-Florida Tamiami Trail which takes one through the justly famous and feared Everglades

Tree-lined Ridgewood Avenue at Daytona Beach, showing a rare example of the three-pronged palmetto on the corner at the left side of the picture

COURTESY DAYTONA C. OF C.



A sentinel of the Tropics stands in evening solitude overlooking the darkening water at West Palm Beach



PUBLISHER'S PHOTO SERVICE

Two lovely ladies of the southern type perched on the sturdy limb of one of the giant Spanish oaks for which old St. Augustine is noted

In soft loveliness the Spanish moss drapes the trees in the lake district in the vicinity of beautiful Orlando

PUBLISHER'S PHOTO SERVICE

Gardening - IN PONCE DE LEON'S LAND

by Ninah M. H. Cummer

IN THE FASTNESS OF A FLORIDA GARDEN
An effective arrangement of bulbs and annuals bordered attractively by camellias and cedars

COULD you find a spot which was not too cold and not too warm; not too wet nor yet too dry; where trees were ever green; where the air was always freighted with the perfume of some sweet scented flower, — orange-blossom, wisteria, rhynchospermum, jessamine or lily; where countless orchids bloomed on friendly trees; where palms spread gracious fronds on every side,—would life seem worth while to you there? Such a spot is Florida, and the dawn of each new day brings to the alert gardener opportunity to make further use of the glorious sunshine.

Mrs. Cummer, author of this article on the gardens and gardening in Florida, is past president of the State Federation of Garden Clubs and active in garden club work in the state

Florida, from the gardener's viewpoint, has four distinctive zones. There is the northern, with its level ground and sandy soil; its marvellous big trees; its holly, azaleas and oleanders; and its mild, though tricky, climate. In the central zone even a light frost is rare and there are lakes with shores outlined by citrus groves and flame vine, thunbergia, poinsettia and hibiscus flourishing in soil still sandy. In the western zone the topography is more rolling, the soil more clayey and here camellias, gardenias, roses and bulbs grow more luxuriantly than elsewhere in the State. In the southern zone the polyp's backbone adds lime ingredients to the soil; the thermometer strikes higher marks, and the tropic growth of royal palm, rare orchids, bromeliads and sea grapes beautify the land. Here one may find in the open garden choice bougainvilleas, rare bignonias, frail exotic ferns, bauhinias, innumerable tender shrubs and tropical fruits.

W. M. BUSWELL

FLOWER OF THE ROSE APPLE
The lovely silken bloom of the attractive Eugenia jambos

Despite these sectional variations, many indeed are the plants indigenous to the entire state. And unquestionably, it is this great versatility of climate and soil which adds enticement to the pursuit of horticulture in Florida.

A BORDER OF TRUE TROPIC LUXURIANCE
Here the beautiful bougainvillea is combined with the Yucca *in a most spectacular fashion*

Indeed gardening in the South is the greatest of anomalies. Everything is topsy-turvy. Flowers supposed to bloom in summer greet us in winter and early spring; few trees are ever bare of leaves; fruit and flowers often hang on the plants at one and the same time. Even the seedman's catalogue must have a special key for Florida's translation. Yet, when one understands the conditions, masters the fundamentals, accepts the ultimatums, and plants with intelligence, results are not to be surpassed anywhere in the world. And, it is up to the gardener, here as anywhere else.

Suppose that we treat our garden room as we would our library, letting common sense and intelligence be the decorators. First, the color scheme of the background must be chosen, and there is really an embarrassment of riches in even the native evergreen material from which to make our choice. The trees may be *Magnolia grandiflora,* the live or water oak, the holly, hickory, juniper, gum, bay, cypress, pine, or palm. Quite frequently, we shall introduce a lightness and daintiness through the placing of a dogwood, a judas, or a plum; and, as January sees the plum burst into bloom, we shall share Lafcadio Hearn's deep joy when he wrote, "Wafted into my room, the scent of the flowers of the plum tree changes my broken window into a source of delight."

Inevitably, a few exotics will hold out irresistible allurements: the jacaranda, with its sky-blue blossoms; the bauhinia, fashioned like an orchid; the cassia and the parkinsonia, with their showers of gold; loquat and kumquat; oleander; camphor; mimosa; crepe myrtle; duranta; cotoneaster; pyracantha; allamanda; nandina, and plumbago —all these certainly merit consideration.

H. H. SCHRODER

OFTEN MISCALLED SAGO PALM
This is Cycas revoluta, *much used for ornamental planting*

If one wishes hedges to provide privacy, a hedge for every taste may be found among the bamboo, *Arundinaria nitida; Juniperus virginiana;* Australian pine; camphor; severinia; pittosporum; ligustrum; *Myrica cerifera;* Surinam cherry; *Ilex vomitoria;* yew; bougainvillea; hibiscus; feijoa;

Abelia grandiflora, and many other delightful blooms.

The wise gardener arrives at a solution as to what grass or ground cover he will plant through logic, using varieties which differ as the location demands,—Saint Augustine for shady places; Bermuda in the sun; *Zoysia matrella* among the stepping stones; carpet grass, lippia, or the recently introduced centipede in the open; but always in the winter season, Italian rye to give the whole lawn the fresh and lovely green aspect of approaching spring.

Where vines are desired, the sturdy *Ficus repens* and the hardy ivy are always trustworthy, while dependables among the jasminums, solanums and bignonias are countless, not to mention thunbergias, wisteria, ipomœas and roses.

Fancy the opportunity to develop exquisitely rare pictures which is offered the landscape architect by the thirty thousand lakes and many long, wide rivers in this state! Lucky the man who may plan a garden leading down to some of these shore lines, planting it for permanency and adding the highlights of color we humans so often crave through the introduction of annuals,—those spoiled children who command daily attentions,—and of perennials, —the pernickety aristocrats complaining ever of too much sun.

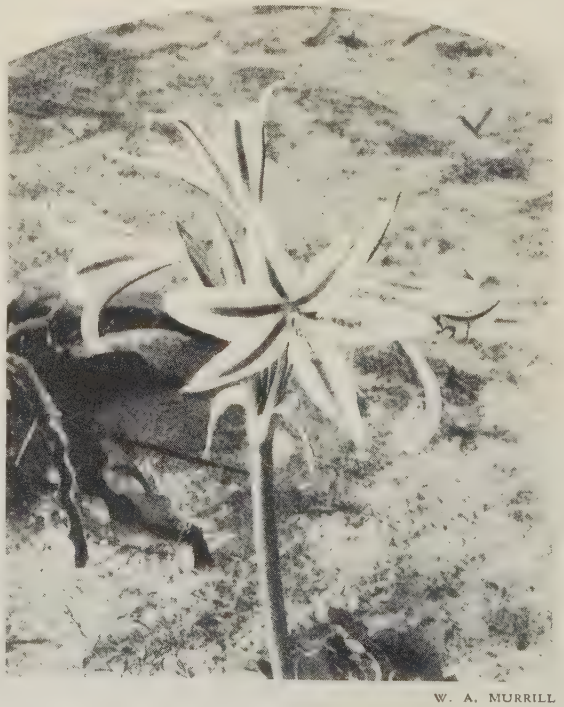
These "pernickety aristocrats" are not entirely satisfying,—or satisfied, for that matter,—in Florida, since only a few of the group behave normally. Stokesia, pentstemon, physostegia, gaillardia, statice, gerbera, tradescantia, ageratum and chrysanthemums are some which carry out the perennial traditions; most of the others revert to the annual status. This is true especially of the delphinium, which blooms in seven or eight months from seeding time, then promptly burns out in the summer's heat.

The gardener must exercise great restraint and good judgment, too, when the bulb question is proposed, since they are grouped for winter, spring and summer bloom respectively. January and February offer Spanish iris, snowflakes, Roman hyacinths, ornithogalum, jonquils, narcissi and clusiana tulips. In March and April, one enjoys callas and lilies of many sorts, gladioli, amaryllis, bearded iris, agapanthus, *Morœa iridioides,* and hemerocallis. Later, come more gladioli, crinums, zephyranthes, *Hyacinthus candicans, Lycoris squamigera,* Guernsey lilies, montbretias, dahlias, nerines, and so on.

H. H. SCHRODER

PAMPAS GRASS, ATTRACTIVE ORNAMENTAL

(Below) An attractive hybrid known popularly as "milk and honey"



W. A. MURRILL

Of course, all southern gardens must have roses, and the climbers, from the old-fashioned banksias, Cherokee and malmaison, to the silver moon, Paul's scarlet, and belle of Portugal, all thrive. Among the others,—besides the old standbys,—the pink and red radiance, that prime favorite among modern roses, is seen in abundance. Its popularity is due to its continuous blooming quality, for the radiance faithfully repeats its cycle of pruning, fertilizing, cultivating and blossoming.

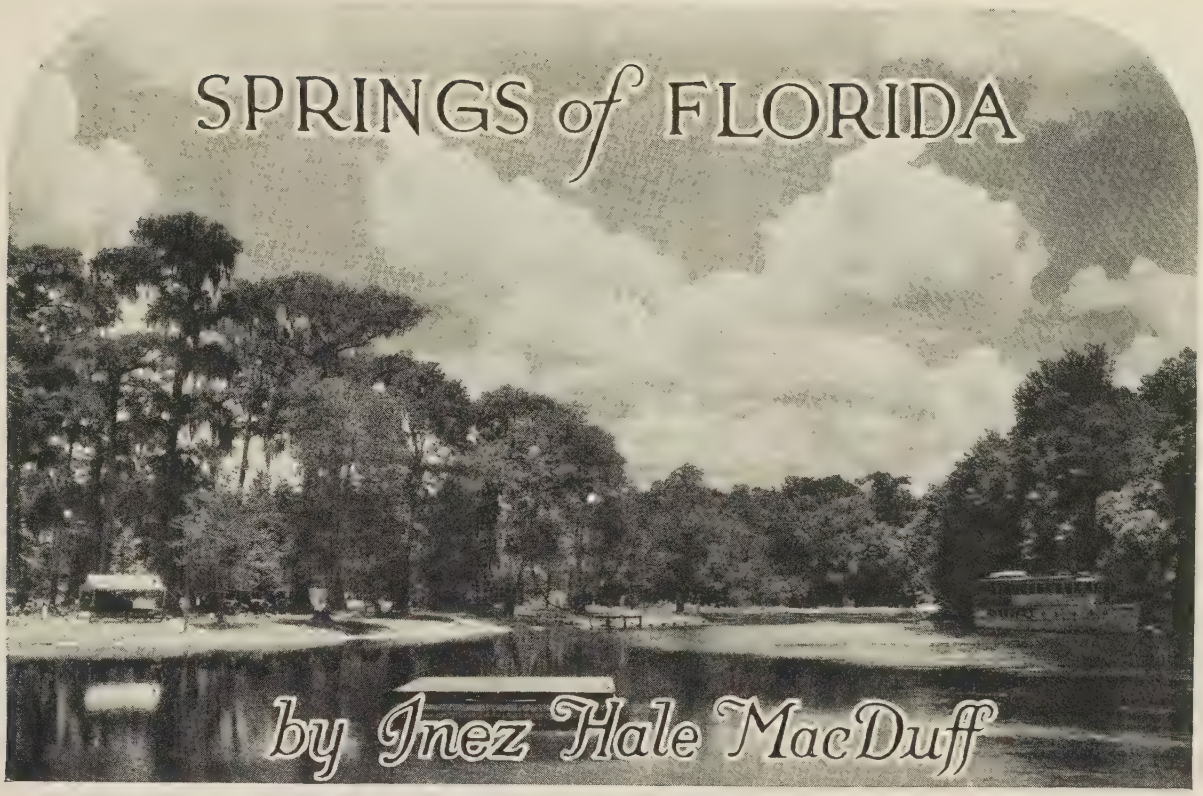
Roses in warm climates are greatly overworked plants, and because of the incessant forcing and great demands made upon them by continuous bloom, their life is not so long as that of the rose grown in the northern sections of our country. If we want the height of loveliness and perfection in our rosery, we replant about every third or fourth season, reconditioning the soil as well.

The trump card in Florida's garden pack is, to me, her azaleas. Unfortunately, we were a trifle dilatory in awakening to the realization that they were ours for the asking; hence, our gardens do not, at present, rival the famous ones at Charleston, South Carolina. Azaleas require a very acid soil, and this fact forestalls their use in the southern part of the state, but in the three other zones they are a delight.

As companions to the azalea during the height of its florescence, the dainty wisteria casts its sweetness on the air, the regal camellia blooms, and the artistic *Magnolia soulangeana* waves its pink and purple flowers aloft, while the lovely calamondins, lacy judas, glistening dogwood and fragrant

(Continued on page 383)

SPRINGS of FLORIDA



by Inez Hale MacDuff

AT SILVER SPRINGS NEAR OCALA, FLORIDA

This is the most widely known of all the many springs of the State and has probably the largest flow in the world

WHETHER the viewpoint is that of a student of Nature, a scientist, a commercial investigator or a pleasure-seeking vacationist, any comprehensive survey of Florida's assets and attractions must include her lakes, springs, small streams, navigable water-courses and extended coast line. In this natural scheme of abundant water supply the springs maintain an interesting and important relationship with the other bodies of water.

Geographically and geologically the state may be roughly separated, when considering the spring waters, into northern, central and southern divisions. Two principal types of springs are observed in these various areas. There are those which emerge in a flow or seep of limited volume from some point near the surface, and usually lie on a hill-side or at the head of a ravine. The other sort includes those in which the water follows a clearly defined channel to the surface.

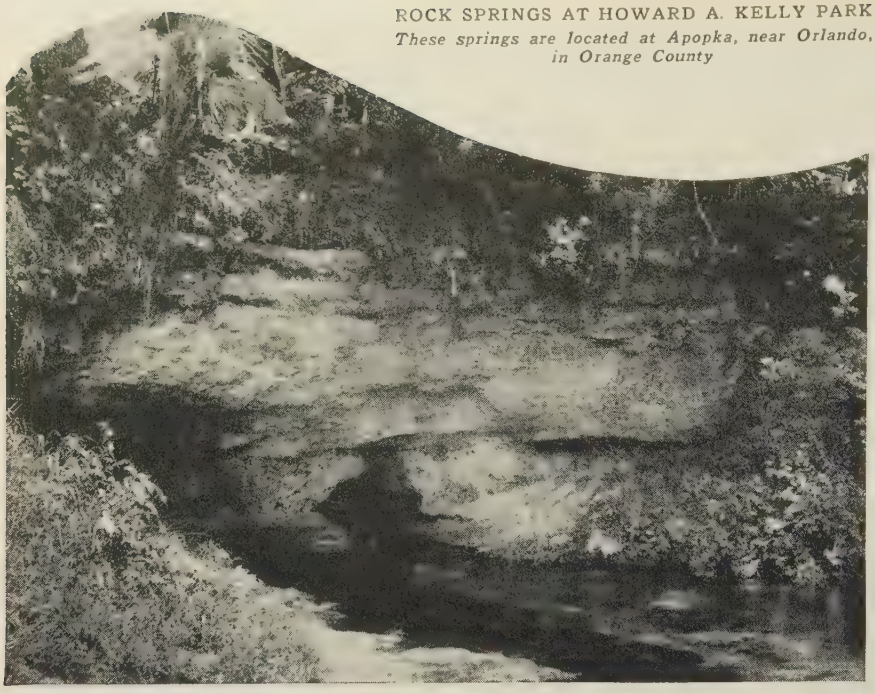
Springs of the first type are found in all parts of the state, but the greater number of them appear in the northern section. Springs of the second type are also found in northern Florida, but they appear in much greater number and size in the central and western portions of the peninsula, where some of them are enormous in volume and in size of spring basin. Almost all of these large springs emerge from the Vicksburgian rocks, either directly or through openings in the younger formations.

The southern part of the peninsula contains few springs of any size and none which are important. Many of the so-called fresh-water springs along the keys or near the coast are really natural wells containing rather brackish water. There are a few springs in the Biscayne pine land, and the Florida State Geological Survey states that there are springs just outside the eastern margin of the Everglades. Some few appear along the lower east coast near Biscayne Bay, but they are very rare on the lower west coast.

Much of Florida is underlain at no great depth by limestone formations which are porous and often cavernous in composition. These yield gradually to the action of surface water bearing carbonic acid derived from decaying organic matter, and as the limestone is dissolved underground channels are formed. The continuation and extension of this system of subterranean drainage produces springs at many points where these streams emerge from underground channels These discharges are very numerous and they vary in size from small boils to discharges of sufficient volume to form the sources of creeks or rivers large enough to float passenger steamers.

The most widely known of these is Silver Springs in Marion County. It has probably the largest flow of any spring in the world,—about 370,000 gallons a minute. Freight and passenger boats come from Jacksonville up the St. Johns River into the Ocklawaha and thence into Silver Springs Run, docking at the spring itself. This is one of the few known instances in which a stream is navigable to its source.

Silver Springs is five and one-half miles east of Ocala, county seat of Marion County in central Florida, and is situated just off a paved state highway. Bathhouses, boat docks and small buildings of rustic type have been erected, but the grounds are clean and attractively kept and there is no air of cheap commercialism to mar the beauty of the scene. Glass-bottom boats,



ROCK SPRINGS AT HOWARD A. KELLY PARK
These springs are located at Apopka, near Orlando, in Orange County

equipped with trained guides, are available for the trip over the spring basin and also for a longer trip down Silver Springs Run.

Viewed from the shore, the basin or spring-head of Silver Springs forms a circle about three hundred yards in diameter, one side of it being approached by a gentle slope of sandy beach and the other fringed with a hammock of dense tropical and semi-tropical foliage. The water is exceedingly clear, as is all water from limestone formations, and possesses a peculiarly transparent quality which excites the wonder and admiration of the onlooker. Many writers have admired its under-water marvels and have painted graphic word-pictures of this beautiful and unique scene. The main basin might be compared to a giant limestone bowl, from the bottom of which water boils up from numberless orifices, large and small, in the rock. Small objects are visible in minutest detail at a depth of forty feet or more, and the remarkable coloring of the water varies with changing weather conditions. Other crevices and fissures in the limestone ledges create a variety of under-water scenery, and fanciful names have been given to the different parts of the spring—Blue Grotto, Florida Snow Storm, Bridal Chamber, Sunken Gardens, Catfish Hotel, Mammoth Rock Ledge, Great Cavern, Valley of a Thousand Boiling Geysers, and others. Fish of many kinds abound in the springs proper and in the stream leading away from them, and a school of small bream has been trained to eat bread from the hands of the visitors. There are also many kinds of turtles, some of them extremely large. The waters of the springs are said to be at a constant temperature of about 72 degrees throughout the year.

A spring which is not so well advertised as Silver Springs, but which possesses rare charm and interest, is Wakulla Spring, in Wakulla County. It is hidden within the heart of one of northwestern Florida's native forests, away from the beaten path of man, and although owned by private interests has never been exploited commercially. In recent years a glass-bottom boat, propelled by a colored guide, has been provided by the owners of the spring, but the customary fee for a leisurely trip over the spring basin is so small as to be negligible.

Those to whom unadorned Nature in her varying moods is interesting and fascinating beyond any attraction which has been produced by artificial means, and who deplore the unrestrained commercialization of many of the beauty spots of America, will enjoy a visit to this quiet and entrancing spot.

The spring is about twenty-two miles from Tallahassee and is reached by driving south to the village of Wakulla, thence southwest to the bridge which spans the Wakulla River, and then, leaving the highway, through a three-mile stretch of densely wooded, sparsely settled territory. The spring nestles within a basin-shaped depression covering

ANOTHER VIEW OF LOVELY SILVER SPRINGS
This is a popular spot for many visitors

about two and one-half acres. It is encircled by a forest of cypress, live oak and black gum, all gracefully festooned with trailing Spanish moss. On the east this woodland merges into an impenetrable hammock, which is the undisturbed haunt of native wildfowl, and on the south the waters of the springs converge into a broad run which, gradually assuming the course and appearance of a river, meanders leisurely around a bend and out of sight.

Although other Florida springs exceed Wakulla in size of flow, it has the largest spring basin in the state and perhaps in the world. Its maximum depth varies from eighty to one hundred and ten feet according to the United States Geological Survey. It is credited with a flow of about 146,000 gallons a minute. The water is extremely clear and, for this type of spring, comparatively soft. Looking into its depths one sees a huge, somewhat irregular bowl with a large round aperture at the bottom, not unlike the crater of a volcano. The waters boil from underneath this rock cliff, whose ragged edges reveal the circumference of the main spring. Drifting out over the main body of the spring, the vividly blue opaqueness of the water is clarified and crystallized into an almost inconceivable transparency. At noonday the rays of the sun penetrate beneath the edges of the ledge of rock and afford glimpses of its dark retreats, but at all other hours the cavernous depths within the grotto are mysterious and baffling.

Although Wakulla Spring has not been stocked with fish, many kinds abound in its waters, among them the fresh-water varieties of bream, trout, drum, mullet and others, and one school of small fish responds to the call of the guide by coming to the bow of the boat to be fed by him. Fishing in the spring is prohibited both by law and custom.

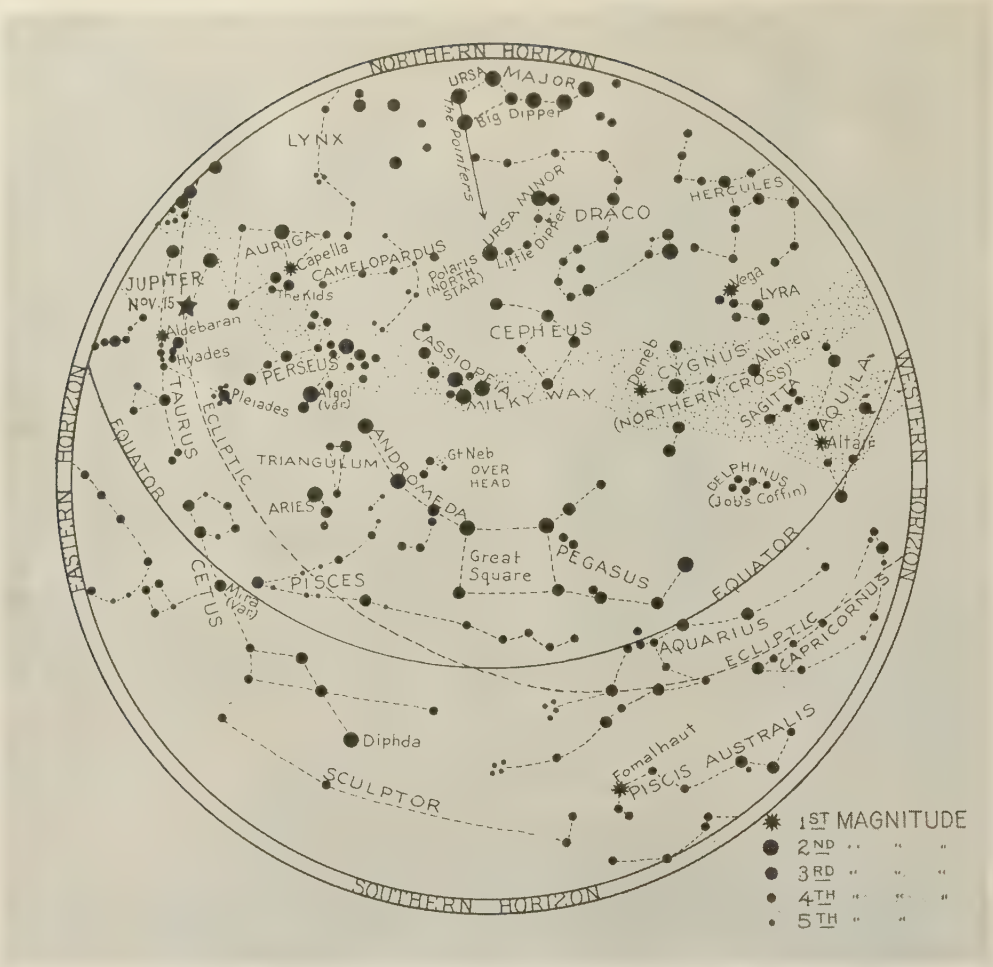
(Continued on page 384)

IN NATURE'S UNDERWATER FAIRYLAND
Showing the clarity of the waters in Silver Springs, famous among many springs

© H. R. BEZANT

(Left) A VIEW OF BLUE SPRINGS
This is located in Volusia County. The second largest spring in the State has the same name and is in Marion County near Juliette

(Below) A VIEW OF WAKULLA SPRINGS
This has a lovely setting away from the madding crowd and is one of the leading springs of the State



TO USE HOLD OVER THE HEAD WITH TOP TOWARD THE NORTH
This map is designed for use on December 1 at 9 p.m.; on December 15 at 8 p.m.; on December 31 at 7 p.m.

WHAT'S *in the* HEAVENS

Florida Skies Offer Special Attractions to Star-Gazers

by Isabel M. Lewis

NOWHERE in the United States is the star-gazer so fortunate as in southern Florida. Here, because of the latitude, stars that never appear above the horizon in northern latitudes may be seen to better advantage than in other southern states. All of the twenty brightest stars in the heavens, including Canopus, the brightest star next to Sirius; Achernar, in the Sky-River; Eridanus; Alpha Centauri, nearest star to the earth, and the four gems of the Southern Cross, may be seen in southern Florida in their proper seasons.

Achernar, which means "End-Of-The-River," is the name of the beautiful first magnitude star in Fluvius Eridanus, the constellation which is partly visible on the December sky map, west and southwest of Orion. It consists of a long straggling line of stars, which in northern latitudes passes from view below the southern horizon, but which in southern Florida flows on to its termination in the southern hemisphere in the brilliant Achernar. This is the time of year to see this star close to the southern horizon in the evening hours in Florida, southern Texas or California, south of the thirtieth parallel of latitude.

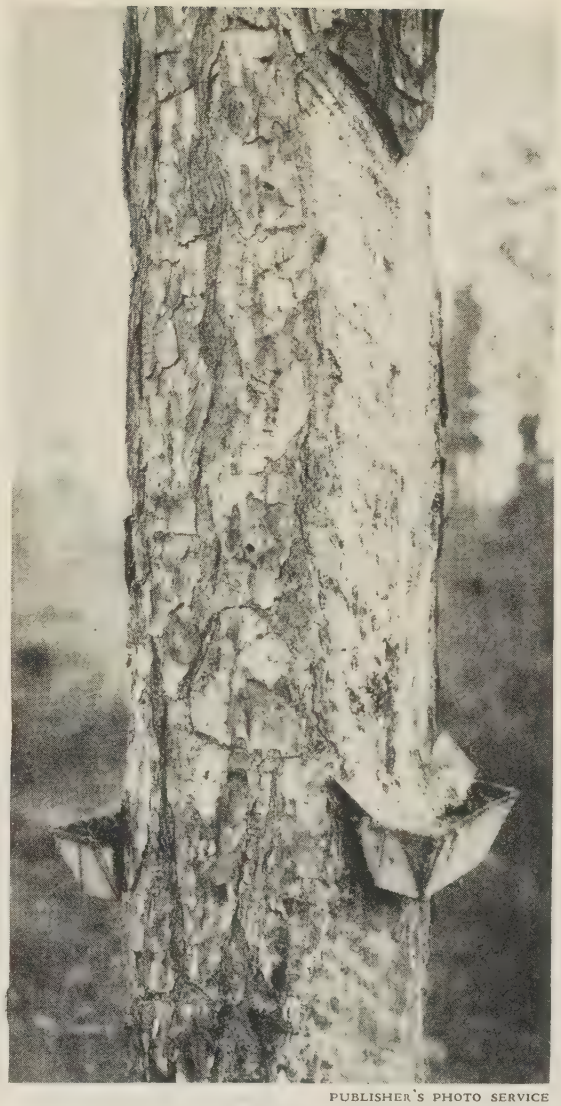
Canopus, one of the most beautiful stars in the heavens and famous in legends of Egypt and the Nile as well as South America, is a brilliant bluish-white color, a magnificent stellar diamond in the far southern constellation of Argo Navis, and it is also known as Alpha Argus. It lies about midway between Sirius in Canis Major and Betelgeuze in Orion, but far south of them. It should be looked for, then, at the same time as Orion or Canis Major and will be seen as far north as the thirty-seventh parallel, though in that latitude it appears only on the southern horizon for a very short period. The Southern Cross lies far south of the spring constellation of Corvus. In the winter one must stay up

(Continued on page 387)

Florida Forests *and* Forestry

The State is Awakening to the Value of this Resource

by
Harry Lee Baker,
State Forester of Florida



PUBLISHER'S PHOTO SERVICE

FOR TURPENTINE AND ROSIN

The naval stores industry of Florida is one of vital importance to the State

SINCE 1513 when the Spanish Explorer, Juan Ponce de Leon, landed on the Atlantic Coast, the province, territory and State of Florida has seen progress under many flags. The luxuriant pine forest that met the eyes of these intrepid explorers has served in the conquest, defense and development of what is today America's most southern continental possession.

The massive pines of the vast forest areas served as the fortresses of the Indians, then Florida's only inhabitants. Later in different form they provided the shelter of a less nomadic race. Still later the tall straight pines served as masts on sailing vessels and the crooked boles and massive limbs of the live oak became the wood par excellence for ships' knees, those curved frame pieces of a ship's interior without which strength was not assured. The years passed on. Supremacy of the seas became a vital factor in the life of nations. In 1794 specifications were laid down for six frigates for the United States Government, among them the "Constitution", and live oak timber was required. Far sighted individuals began to wonder about the supply of this indispensable wood. England, even then old in forestry practice, planted acorns of the Florida live oaks at home. Russia planted them in the Crimea. The eyes of the naval world turned toward Florida. The forests had played their part in the history of Florida. Now Florida is to play her part in the history of forestry.

Jenks Cameron in his book, "Development of Governmental Forest Control in the United States," tells the story in detail. John Quincy Adams was our representative at the Russian Court in 1811. He spent some time in England. He knew the term "Supremacy of the Seas". He knew that live oak timber was abundant in Florida. He knew what Russia and England were doing. He knew why! In 1819 Mr. Adams became Secretary of State and Mr. Cameron does not hesitate to imply that these things were in his mind when negotiations were completed with Spain for the acquisition of Florida. In 1825 Mr. Adams became President and out of his

U. S. NAVAL AIR STATION

AN HISTORIC SPOT IN FORESTRY HISTORY

The island of Santa Rosa off Pensacola where reforestation was first practiced in the United States

knowledge of conditions at home and abroad, and out of a motion in Congress sponsored by a gentleman from Florida, came the first national effort in America at reforestation and forest management. The little island of Santa Rosa off Pensacola was the scene, and Colonel White, the Congressional Delegate from Florida, sponsored the motion. As a result of this new policy, plantations of live oak acorns were made, fire lanes constructed, wardens appointed, patrols established and improvement cuttings carried on for the elimination of weed trees. All in the State of Florida and all over one hundred years ago.

But time flies. The early explorers that sought the Fountain of Youth have been replaced by other explorers seeking an unexcelled climate and a land of continual sunshine. The fountain of youth was provided by railroad builders like Flagler and Plant, men of vision who could look beyond the swamps and forests and see the object of their search in the glorified resort places of the lower peninsula. Ships' knees gave way to the more graceful human variety on the beaches of America's playground. Live oak ship timber of early days was passed up for timbers suitable for the bungalows and skyscrapers of the Northland and the solid gold sought by the early adventurer was replaced by the liquid gold of the southern pines—the resin from whence comes turpentine and rosin of an international trade. The giant cypress and the gum that increased the jungle shades in the home of the alligator and heron have gone to form the beautiful interior finishings of the great mansions of the East and West, and descendants of pines that once formed the spars of the navies of the world find their destinies in the boxes, crates and hampers of a rapidly increasing citrus and truck crop industry.

U. S. FOREST SERVICE

CLOSE STAND OF LONGLEAF PINE

Growth of about forty-year-old trees of this pine which produces naval stores and finally saw logs

There is Romance associated with the very term, Florida's Forests. Few appreciate the size of this state that stands second in area of all the states east of the Mississippi. A trip from the western boundary to Key West would cover the mileage necessary to go from Florida to Pennsylvania—and what a variety of conditions, what a wealth of flora, and what a multitude of ideas exist about it. To the small boy of the North, a forest in Florida means deep, dense jungles with towering cypress and encircling vines of enormous size. To the lumberman, it is the home of the world's structural timber. To the turpentine operator, it is the orchard where dual-purpose slash and long leaf pine trees first yield gum for turpentine and rosin, later to provide saw-logs for the mills. To the chemist, it is a wood fibre factory, where cellulose, the basic material of a new age, will be obtained. To the lover of beauty, it is the home of the flowering dogwood and magnolia. To the botanist, it is the home of about two hundred native tree species of which one hundred are found exclusively in Florida. To the forester, it is the foundation of a permanent civilization, a source of raw material to sustain wood-using industries for all time, a source of labor for her people, a source of wealth for the land owners, and a source of taxes for the state. To him, the forests of Florida are fundamental, perpetual under proper management, and an element in the economic life of the state which cannot be ignored.

The forests of Florida are all of these. Let us as tourists journey from Pensacola in the West, travel to the East Coast and hence south to Key West. Before our long journey is ended we will observe five distinct types of forest land, the piney woods, the scrub, the hammock, the swamp, and the subtropical. We begin our travel on the old Spanish Trail, now a ribbon of

concrete and asphalt. Notice the long leaf pine on either side of the road; second growth and almost ready for cutting again. Note the great open spaces resulting from woods burning, an ingrown habit of many people of the South. Note the small number of trees to the acre—fire again. But above all, note the splendid productive capacity of the soil *in spite of fire*. This type continues four hundred miles from the western end of Florida to the world's famous auto-speedway beaches on the East Coast and on south another four hundred miles to the tip of the peninsula, interrupted with other types and other species. Continuing eastward, we now enter an isolated area of scrub type where the once prevalent long leaf pine has waged an up-hill battle against fire, overcutting and destructive turpentining. Here the sand-hills have been denied Nature's protection in shade and duff. Few of the baby long leaf pines have been able to survive in the hot, dry sand, and scrub oak thickets abound everywhere. Note the scattered long leaf saplings in these oak thickets, ready and willing to restore the area to its original covering of pine, if fire can be kept out. The black jack oak seldom reaches six inches in diameter and is good only for fire wood, while the long leaf pine makes our finest structural lumber and produces the turpentine, rosin, tar and pitch, commonly known as naval stores.

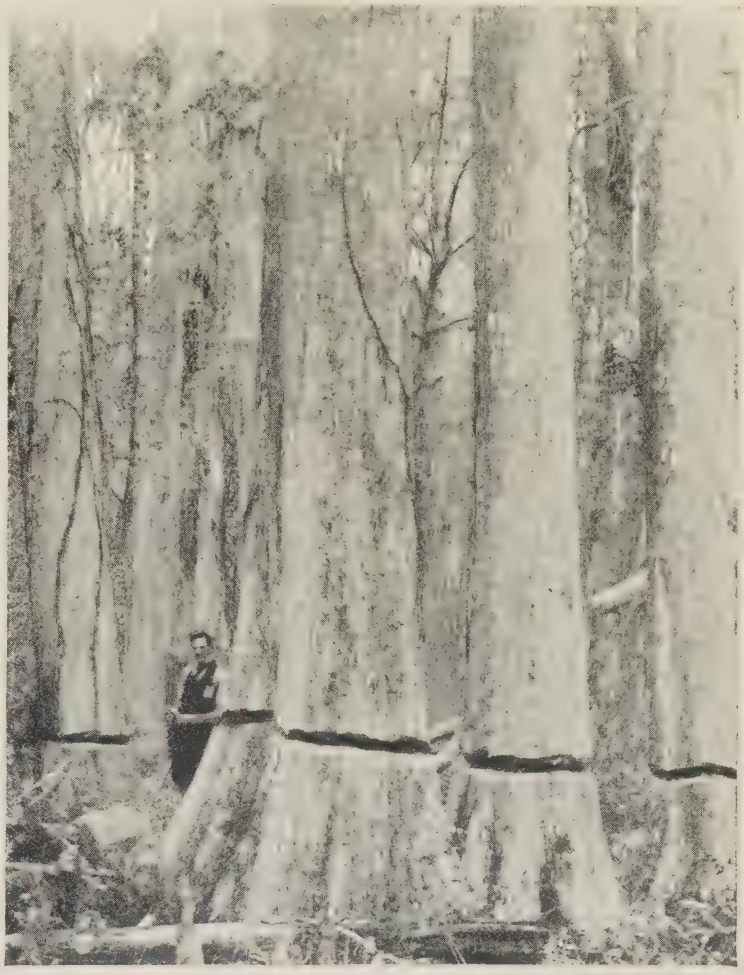
Continue eastward into the hilly section of central Florida. Here abound great forests of rapid-growing gum, bay, poplar, magnolia, hickory, ash, dogwood and cherry, with a sprinkling of short leaf and loblolly pine. Pure stands of these pine are common on old corn and cotton fields, "turned out" after the Civil War, proving to all men that Nature given half a chance will do its part in growing saw-log timber in one generation.

Pass through Tallahassee, but not without noticing the shade trees of that beautiful, quaint city, the Capital of Florida. Here massive live oaks three to five feet in diameter form moss draped arches over shaded streets of marvelous beauty.

Continuing eastward to the coast we pass through one hundred and ninety miles of second growth pine, with occasional patches of scrub and hammock. The short leaf and loblolly pines drop off as we approach the heart of the Florida slash pine region. Here, pine growth is at its best. Here, cellulose is produced four to seven times faster than is the red spruce of the north. Down through central Florida we enter the cypress section where are found buttressed cypress trees that rival in age the redwoods of California. It is from this section, and from south Florida, that millions of feet of cypress are shipped annually as piling, poles, ties and flooring. Here also is found that beautiful paneling material, the "pecky" cypress oft-times used as interior finish in Colonial homes.

Now we enter the citrus belt and the home of winter vegetables. The forests of Florida are closely tied in with her agricultural life. The citrus and truck crop industries alone consumed over 160 million board feet of lumber in 1925 for crates, hampers and boxes, and it is expected that the requirements of these industries will double by 1934. Conservative estimates require three million acres of forest land for wood production for this industry alone. Failure to utilize that area threatens to compel the agricultural industry to seek its supply in the primeval timber of the Pacific Coast.

In south Florida, strange as it may seem, the advantages of climate and rainfall are not so apparent in the growth of timber. Slash pine, as well as long leaf pine, abound in the flatwoods but height and diameter growth is less than that for the same species in the northern part.



AMERICAN LUMBERMAN

IN THE HEART OF THE CYPRESS FOREST

A stand of these great trees, which rival the redwoods in age, near Perry, Florida

A particularly bad fire situation and high water table play their part in the slower growth on the millions of acres of idle lands. Drainage is having its effect in places and, with fire protection, gives promise of fair yields of timber on a thirty to forty year rotation basis.

Cabbage palmettos, along with hickory and maple, characterize the hammocks surrounding the Everglades region where possibly no trees ever grew. Slash and long leaf pines are found in the flatwoods and cypress in the swamps. Here, too, we come in contact with new species, native and exotic. Mahogany appears occasionally and

(Continued on page 387)

NATURE NEWS AND Views

Anent Conservation

In these pages in October there was a review of a pamphlet entitled "A Crisis in Conservation", and bearing the signatures of the late W. DeWitt Miller, Willard G. Van Name and Davis Quinn. Although no mention of their affiliation is made in the pamphlet or in our review, the first two named were, prior to Mr. Miller's death, members of the staff of the American Museum of Natural History. In view of this association, George E. Sherwood, Director of the Museum, has issued a statement asserting that the pamphlet was issued privately and without the endorsement and approval of the Museum. Mr. Sherwood goes further to add that the Museum "not only does not approve of this pamphlet but believes that it will convey a wholly false impression of the existing state of affairs in the conservation of bird-life, and by discrediting the efforts of organizations whose records of achievement are unquestioned and worthy of all support it feels that this pamphlet may do much harm."

An International Garden

An international peace garden on the boundary lines between Canada and the United States is visualized for the future as a result of the efforts of the National Association of Gardeners. The proposed garden, which should stand as a monument to the friendship of the two peoples, has gained the support of numerous industrial, political and civic leaders, and has the backing of the entire horticultural industry. Its exact location, size and plan have not yet been worked out, but the National Association has appointed a committee which is rapidly formulating an organization to bring about this noteworthy achievement.

An Ice-bound Snake

A snake that became frozen in ice, then warmed up to life when the ice was melted is perhaps continuing the enjoyment of life, liberty and the pursuit of happiness in Kentucky, while those that saw it marvel at its resuscitation. It was found in a block of ice about three inches thick. As the ice melted, the snake began to show signs of activity, and soon began to coil itself and strike at persons watching it. It was a water snake about twenty inches in length.

Finley Lecture Dates

Members of the American Nature Association undoubtedly will be interested in knowing of lecture dates of William L. Finley in the West and East during the winter. His lectures are delivered under various auspices and the following dates during December and January are now effective:

December 6, Walla Walla, Washington; December 7, College Place, Washington; December 10, Great Falls, Montana; December 11, Havre, Montana; December 13, Wenatchee, Washington; January 6, Merced, California; January 7, Fresno, California; January 9, Oakland, California; January 10, San Francisco; January 13, Reno, Nevada; January 15, Salt Lake City, Utah; January 17, Colorado Springs, Colorado; January 19, Provo, Utah.

Practically Over

With hardly more than twenty days remaining before the curtain is rung down on the National Flower Poll, a last-minute flood of the ballot box is attempting desperately to stem the tide which early turned to the wild rose, and to bring some other candidate to the fore.

The fall campaign, more intense than any hitherto in the referendum, has failed, it is believed, to put the columbine into office. The American Beauty rose has gained surprisingly. The returns, tabulated only as of October 10, the date of going to press, are as follows:

Wild Rose	366,979
Columbine	147,192
Violet	76,575
Goldenrod	66,315
Phlox	29,346
American Beauty Rose	14,923
Daisy	14,649
Mountain Laurel	11,206
Dogwood	7,526
Scattering	22,999
Total	757,710

Indian Corn

A strong movement to establish Indian corn, or maize, as the National Flower is showing itself in New Jersey through the activity of the Naturalists Field Club of Salem, whose president, Miss Elizabeth Emmel, points out some of the advantages of the pioneer plant. It adapts itself to all varieties of soil and climate, she says; it is purely American in origin, its history weaves itself closely with that of the nation, and its beauty is unsurpassed. It could be adopted readily in architectural design, and was used on many of the state buildings at the "Columbia Fair," in Chicago. A number of prominent Americans have suggested it, among them John Fiske, who remarked: "In adopting maize we do not invent anything out of our fancy. We simply recognize an existing fact, and it is richer in aesthetic suggestiveness than any other that has ever served as a national flower."

Louisiana Bird Day

A little pamphlet which may be of use and interest to teachers has been issued by the Department of Conservation of the Bureau of Education, New Court Building, New Orleans, Louisiana. It is entitled *Louisiana Bird Day*, and contains interesting suggestions for programs, together with stories and much information on birds.

Alaska Eagles Still Persecuted

From time to time we are reminded that Alaska pays a bounty on eagles killed in its territory, and it is noted that its legislature has recently appropriated $10,000 to continue payment of this bounty. The American Nature Association, it is needless to say, is unalterably opposed to the wanton destruction of the bird that has been chosen as our national emblem. The payment of a bounty on the eagle has never been justified by any worthwhile investigation of its food, but only on the suspicion that the bird is excessively harmful to other forms of wild life. The fishery interests are especially eager to accuse the bird. However, any fair-minded person at all acquainted with the habits of salmon, eagles or fish canners knows that the salmon taken by eagles are mainly those that are dead or dying after spawning, and that excessive fishing and waste in handling the catch are the real causes of the difficulty experienced in maintaining a salmon pack satisfactory to those exploiting this resource. Charges that the decrease in game animals and birds is due to any appreciable extent to the eagle are also not justified by the facts.

Fortunately the bald eagle is protected by law and sentiment in many of our states, though in spite of this it is nearly everywhere a scarce bird. The coast of Alaska is practically the only part of North America where the traveler following the ordinary routes may observe this magnificent bird in any numbers, and it is shameful that it should there have a price on its head.

Do Snakes Swallow Their Young for Protection?

At the request of a reader of Nature Magazine, we are asking for observations confirming the oft-repeated story that young snakes are swallowed by the mother for protection. If anyone sees a snake swallow her young, and will capture and confine her, and then observe her disgorge the young ones unhurt, he will be making a very important observation. It should be noted that a number of our snakes bring forth living young, and that finding young within the body of the old one, or observing their emergence without their having been swallowed, means nothing new. We do not wish clippings on the subject, but only carefully reported accounts of first hand observations, preferably of recent occurrence.

Dove Season in Louisiana

By an amendment of section 1 of act No. 268 of 1928, the legislature of the State of Louisiana reduced the season for hunting mourning doves to two months—from December 1 to January 31. Evidently Louisiana does not wish its citizens to kill doves while they are still caring for their young, as is allowed under the so-called "split" season granted under the Federal migratory bird law, which opens the gunning season on September 1. The act containing this amendment was approved by the Governor on December 18, 1928.

TRAVEL DEPARTMENT

(Continued from page 327)

popular; this gives eight days on the Islands, sufficient for sight-seeing. For prices ranging from $326 up, one can escape winter, watch two of the world's active volcanoes, see tropic sights in temperatures never too hot or cold, and be royally entertained in the bargain. The Lassco line is the Los Angeles Steamship Company.

* * *

There are literally myriads of places to visit in Florida, places to which you must go before returning home. Two of the objects of pilgrimage must be, however, Daytona Beach and St. Petersburg. Daytona Beach is probably the most famous beach on the Atlantic coast. Here racing cars thunder up and down; here fishermen cast their lines along the shore and out into the surf; here, during the winter season, the gala crowds of every section gather to gain health and happiness on the sun-lit sands. From Daytona beautiful highways stretch out to all the other wonderful sections of the state. St. Augustine and its famous houses and park, Orlando, and Jacksonville are nearby. Daytona has the distinction of being both a summer and a winter resort.

* * *

Probably more a business center than a resort, St. Petersburg, on the West Coast, offers as much to the tourist as any other part of the Everglade State. Semi-tropical verdure is at its best near this bustling community, and to travel along the approaches, between rows of palm trees, is to imagine yourself not in the United States of America, but in some far southern land. The waters of the Gulf of Mexico lap the piles of the great municipal pier, along which, each day, hundreds fish with unfailing success and turn their catches over to the great flocks of pelicans which linger nearby, eager for free meals. St. Petersburg is one of the garden spots of Florida.

The Grand Canyon

Grand Canyon Country is the title which M. R. Tillotson and Frank J. Taylor have given to their volume on that great National Park area. It is a book which everyone who is going or who hopes to go to this natural wonderland should read. The authors have adopted an informal style to tell of the history, structure, wild life and other details of this country and it is both enjoyable and informative reading. Mr. Tillotson is superintendent of the Park and Mr. Taylor is known as a writer on the outdoors. The book is published by the Stanford University Press, Stanford University, California and sells for two dollars.

Anent the Jungle

Two books of the jungle, both by Dhan Gopal Mukerji,—who knows his jungle,—have come from the presses of E. P. Dutton and Company of New York. These are *Jungle Beasts and Men* and *Chief of the Herd*, and depict the wild, thrilling, lush and primeval life of the jungle fastnesses. They are written with an infinite appreciation of the wild life of that region. They are listed at two and two and one-half dollars respectively.

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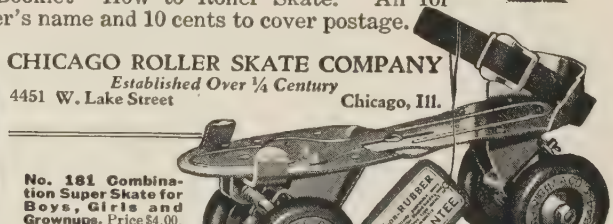

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FLORIDA

(Continued from page 335)

industry were preceded by the citrus fruit growers who early began to cultivate the upper central part of the peninsula. Today orange trees, fifty years or more of age, are thriving in Florida, though the citrus planting of the last few years has greatly exceeded previous citrus cultivation. The introduction of citrus fruits has been followed by other semi-tropical fruits and plants. The papaya, the coconut palm, many varieties of annonas which are tropical fruits little known in America, and many species of rubber-bearing trees and vines, as well as a host of valuable plants from all corners of the tropical world, yielding dyes, oils, flavoring extracts, perfumes and medicines, disclose new tropical opportunities. Many of the foreign grasses and forage plants have become so widely distributed as to be regarded as native. In numerous regions of the state the climate and soil permit the raising of several vegetable or forage crops or both in alternation on the same ground within a single year.

The natural beauties of Florida contribute to the Florida home. Flowers and colorful shrubs set forth the yards of the humblest of citizens. Coconut palms, hibiscus, bougainvillea, passion vine, roses, geraniums, the traveller's tree, the giant live oak with its cool shade are among the many ornamental trees and plants available in varied latitudes of Florida. The flowers and trees are sure to attract feathered songsters. The ocean, the lake, or the river is seldom very far distant. Nature, indeed, has been lavish in her gifts to Florida, and she is indeed willing to welcome the stranger.

FLORIDA'S MAMMALS

(Continued from page 340)

than the Okefinokee swamp of southern Georgia, was unknown to naturalists until 1884, when a specimen was captured by a local resident and sent to the Smithsonian Institute to be named.

These water rats live in colonies in the Everglades and in other marshes and ponds, both fresh and salt. They build for their protection small domed huts of grass or rushes, similar to the houses constructed by muskrats, but very much smaller—usually about 12 or 15 inches in diameter or sometimes as large as a bushel basket. These huts are built in marshes or on the "floating islands" found in many of the fresh water lakes, and invariably have two entrances from beneath and a central elevated platform in the center, which provides a resting place above the water level and a nest for the young. Underground tunnels lead out from the huts in various directions through the bog, occasionally coming to the surface and ending in a small platform of mud.

Squirrels of several species are found in nearly all parts of the state. The little gray squirrel, or "cat squirrel", is the most numerous. The Florida fox squirrel is a much larger and handsomer animal, with a white nose, black forehead and light gray body. These big fellows dwell chiefly in the pine woods and around the borders of cypress swamps, and are exceedingly shy. A smaller, more tawny race of the fox squirrel is

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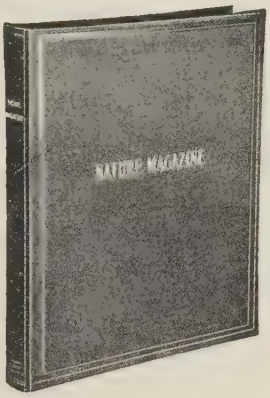

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found in the mangrove forests on the southwestern coast. Flying squirrels occur also in many localities.

Rabbits of two species are abundant—the common cottontail of the uplands and the marsh rabbit of the swamps, an expert swimmer.

The insectivores include moles of rather small size and pale color which are everywhere abundant, two species of tiny short-tailed shrews, and a rare long-tailed species captured only at Gainesville; and bats of several species.

Most remarkable of all Florida mammals is the aquatic manatee, or sea-cow—an immigrant from Central America and the only tropical mammal found in the state. This huge beast, weighing more than a ton, lives in the coastal waters of the southern half of the state, entering the inlets and mouths of the rivers to feed and to bring forth its young. It is a vegetable feeder, subsisting mainly on an aquatic plant known as "manatee grass" (*Cymodocea manatorum*), and to a less extent on mangrove leaves when its favorite food fails.

Although timid and entirely harmless, the manatee sometimes unwittingly is the cause of an upset when rising unexpectedly to the surface beneath a small boat. Being a tropical species, it cannot endure much cold and when sudden cold spells strike southern Florida, many of the animals are overcome in shallow water before they can retire to the warmer depths of the ocean.

FLORIDA'S WILD FLOWERS

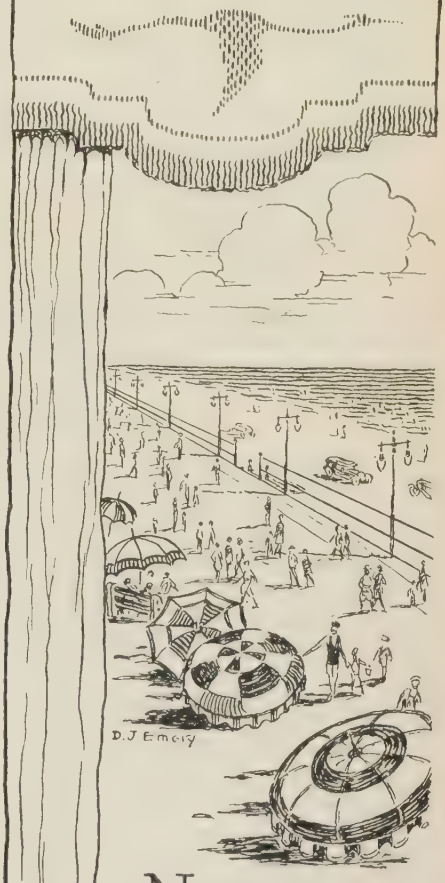
(Continued from page 344)

sprinkled with diminutive white flowers, the fragrant wild crinum and spider lilies with large white flowers, the pale purple ruellias opening their attractive flowers for a day, the milkworts coloring the marshes and scattered through the pinelands, the wild scarlet sage and blue sage, the wild verbenas and wild heliotropes, the beautiful purple and yellow butterworts, the sensitive briars with pink flowering-heads like dolls' powder puffs, the many morning glories, the low papaws unfolding large white petals beneath the pine trees, are as typical of the Florida flora as are her palms and bay trees and the great magnolias, which is noted far and wide as one of the most beautiful trees of the world.

A Seeing Traveler

In *A Greenhorn in Europe,* James H. Lindsay has recorded in a simple and engaging way experiences of a European trip. This seems a commonplace statement and a thing which has been done times *ad nauseum.* It has but not as Mr. Lindsay has refreshingly done it. This is because the author is a more than usually alert reporter and observer. He has seen things which the average traveler, and the average travel writer,—both rushing from cathedral to monument to gallery,—does not see or sense. Dorrance and Company, Philadelphia, have published this attractive little book which it would be well for prospective European travelers to read. It will suggest to them how to keep their eyes open for the little things.

DAYTONA BEACH FLORIDA



NEW and greater facilities for enjoyment are offered this year. The new Boardwalk on the Ocean Front has been tripled in length. The River Front Park is ablaze with tropical flowers in a setting of green shrubbery. A Municipal Air Port, located almost in the center of the city, makes arrival and departure by air safe and convenient. A stadium faces the Big League Training Ground.

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GREAT GAME FISHES

(Continued from page 347)

other varieties roaming above the bottom. Semi-tropical fishes have a peculiar attraction because of their brilliant colorings. Often they are as changeful as a chameleon. I have seen a newly caught bonita change its hues repeatedly upon being pulled into the boat. Then there is a tremendous variation of colors in many fishes of the same species. For example, I think the permit one of the most beautiful fish in the tropical world, but there is often great variety in the intensity of the silver hues among different fish of this species.

The amberjack, *Seriola lalandi,* does not seem to vary so much in color. He is a marvelous battler, reaching up to one hundred pounds in Florida waters, and, is, I think, the strongest fish of his weight in the world He is a most curious fish and the sight of another fish being played by the angler upon the surface will usually bring a nearby school of amberjacks to the surface to see what it is all about. While not a leaper like the tarpon, sailfish, wahoo, kingfish, and several others which frequent Florida waters, he is tremendously powerful.

I have spent my happiest hours watching the prolific and varied life of the Florida reefs. It is a never ending surprise. I can only invite others to enjoy it. But do not make a business of it. And don't hurry it. Take it easy. So much interesting life passes by on the Gulf Stream when the fish are not biting, that much is lost by hurry.

STRANGE ARE THY FRUITS

(Continued from page 353)

it is chiefly for the excellence of its jelly and preserves. The loquat stands, bush-like, approximately twenty feet high. It has been budded sucessfully both in California and Florida.

And, of course, there are the staples—the citrus fruits, bananas and pineapples—all widely known natives of the tropics. The citrus species, contrary to belief, have all been imported to the American continent and have since become so naturalized they grow in a native state. Banana plants and plantations are to be seen in Florida, of course, although their commercial value still is more or less problematical. The pineapple, of course, grows wild in tropical America, and twenty-five years ago it was the basis of one of Florida's greatest industries. Twenty-five years ago almost the entire Atlantic coastal section of the state was a solid growth of commercial pineapples. But the villainous nematode, without ado and without heraldry, made its appearance. However, of late it has been discovered that the bug has starved, and with other things remaining more equal, the pineapple industry on the lower east coast is being revived.

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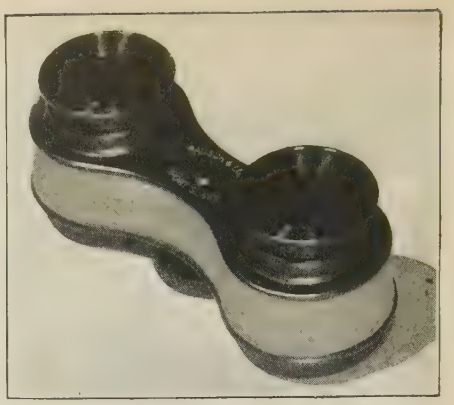

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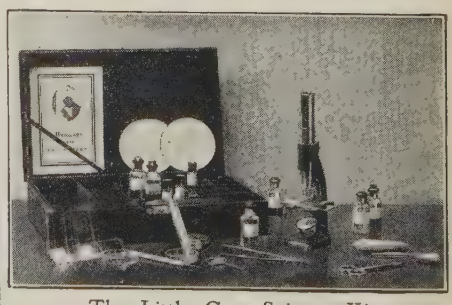

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CONQUERING THE FRUIT FLY

(Continued from page 356)

fested. In the whole month of July only 59 such properties were found and in August only a scattering few.

It will be many months yet before the cautious state and federal officials can feel anything like assurance that they have the situation well in hand. The crop maturing in the winter and spring of 1929-30 will furnish the real check, as it will indicate how many of the hidden larvae managed to escape destruction and continue their line. Then, too, there is always the danger that fruit shipments to other states have carried the pest to new territories. When the fly was discovered in April the larger part of the crop had been shipped. It would have been no cause for wonder if the infestation had spread far and wide. But the fly was in fact found in other states only in a few scattered shipments of Florida fruit which left that state before the quarantine became effective and these shipments were immediately destroyed.

Promptly undertaken, swiftly executed, well planned and handled, this latest little war of scientist against insect furnishes just about the most striking example we have had of the value of modern quarantine service. If you still have any doubt about that value, ask the lumberman standing sadly amid the ruins of our once noble stand of chestnut timber; or the New England selectman fighting endlessly to hold the Gypsy moth in check; or the cotton farmer watching the weevil eat up great bales of dollars season after season. What would it not have been worth to each of them to have had at the proper moment just such an effective defense as that which has blocked this first incursion of *Ceratitis capitata*!

FLORIDA—MECCA OF THE BIRD LOVER

(Continued from page 360)

ibises were rising from the mangroves with a mighty roar of wings, and scores of cormorants were dropping off the outer branches into the water. When fairly in their midst, the air seemed full of the smaller herons, flopping up ahead of us, drifting around the island and floating over us; and mingled with them were circling water turkeys, soaring turkey vultures, and hovering fish crows, ready to pounce on unprotected eggs."

Many of the birds mentioned in the preceding paragraphs can be seen only by those able and willing to make considerable effort. But there is hardly a place in Florida that does not offer good opportunities for bird study. A cypress pond is one of the "birdiest" spots in Florida. In the midst of one, the bird lover's ear is greeted by a familiar group of voices—the loud, ringing antiphonal chorus of a pair of Florida wrens, the even trill of a pine warbler, the rolling, resonant call of a pileated woodpecker, the low cry of a catbird, the scream of a red-shouldered hawk, the noisy rattle of a kingfisher, the raucous calls of a flock of common crows, the

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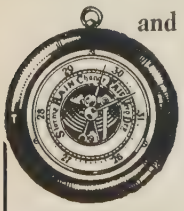

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"peto" of a tufted titmouse, the nasal "yank" of a troop of brown-headed nuthatches, the scolding chatter of a house wren, the pretty whistle of a meadow-lark from the encircling flatwoods, the persistent, explosive call of a white-eyed vireo—these and other avian voices are heard from all sides.

As the season advances, transient species are passing and summer residents return. Then the pond is musical with the parula's sweet, lisping trill, the loud song of the golden swamp warbler, and other songsters such as the yellow-throated warbler and the Florida yellow-throat are in full voice. The cypress pond is an oasis in the great flatwoods area. Even mockingbirds are to be found there, and occasional hermit thrushes in winter.

On the coast, there are the shore and sea birds for study. On the famous Daytona Beach, one may ride in an automobile for twenty miles and see enough bird forms to excite the stranger and to maintain the perennial interest of the local enthusiast. Beyond the edge of the breakers, snowy-white gannets plunge like meteors into the sea. A file of solemn, grotesque pelicans rises and falls with the billows. If the month is April or May, large flocks of shore birds are encountered—several hundred red-breasted knots; black-bellied plovers circling out over the waves to escape too close approach; ever-present sanderlings dodging traffic with unconcern; semipalmated, piping and Wilson plovers appear in quick succession; semipalmated sandpipers common everywhere; ruddy turnstones, bright with red and black, scattered along the beach; an occasional tall willet and a rare Hudsonian curlew may be seen.

At the inlet, a few miles south of Daytona Beach, all of these shore birds are found, together with flocks of red-backed sandpipers and least sandpipers. Thousands of black skimmers display their beautiful aerial evolutions, white breasts, red bills and ebony backs glistening in the tropic sun. On the outer bars are hundreds of brown pelicans, royal terns, herring and ring-billed gulls. On rare occasions, one may see an oystercatcher, a Wilson petrel, or an Audubon shearwater. Least terns breed on the sand in June. Black terns, nesting in the north, contrive to be represented here from May to September.

Along the marshy edge of the lagoon, it is a rare treat to come upon a black-necked stilt wading with long, red legs, and to see a couple of stilt sandpipers, their rufous ear coverts plainly seen with the advent of breeding plumage.

And so, because of its rare forms, abundant water bird life, and variety of migrant and resident species, Florida possesses an avifauna of unusual interest, giving the State since the days of John James Audubon its just reputation as the Mecca of ornithologists.

Bob North Goes North

When making up the Christmas book list for young Bill or Bob it might be well to jot down *Bob North with Dog Team and Indians*, by Robert Carver North. It is a book of high adventure for boys or grown-ups written by the boy who adventured. It is published by G. P. Putnam's Sons and listed at $1.75.

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GARDENING IN PONCE DE LEON'S LAND

(Continued from page 368)

crabs are vying, one with another, to attract the visitor's admiring comment.

In the spring of the year 1922, there was a sudden awakening among garden enthusiasts of Florida to the fact that they were not making the most of their tremendous advantages, and simultaneously, that year, three garden clubs sprang into existence in different parts of the state. Late in 1924, these same clubs formed a state federation, having as its slogan, "Knowledge through work; growth through service." Their membership, now numbering about twenty-five hundred, is extremely democratic and extends from one end of the state to the other.

The distinctive characteristic of the majority of these Florida garden clubs is the fact that they are organized for study and function under the circle plan, thus enabling groups in all sections of any city to form themselves into branches of the main club in that city, with the single requirement that they be active. One such club includes thirty circles and has a total enrollment of over seven hundred members. Each circle plans and publishes its own program and year book, and only in matters of civic policy, the flower show, or general open days, is there a union of all circles.

Great effort is being made by the Garden Club to educate the State Road Department in the appreciation of Florida's wealth of native material, which should be conserved and used most generously in highway beautification.

Naturally, the state is eager to protect and save its diminishing supply of holly, and the Garden Club is ever alert to suggest to the public appropriate substitutes for this popular Christmas green. It sponsors enthusiastically the custom which is spreading over Florida of having growing trees and shrubs lighted outdoors each night from Christmas Eve through New Year's.

The Garden Club's most ambitious and important move, however, is the step taken toward the establishment of a Botanical Garden in the southern section of the state. Since Florida has the only truly sub-tropical climate in the United States, such a garden would be of great value in completing the network of arboreta in this country. Hence, the Florida Federation of Garden Clubs means to continue working enthusiastically on this issue until it shall see its dream come true.

"Show me your garden, provided it be your own," said Alfred Austin, "and I will tell you what you are like." Some day, you *shall* see our garden, and by that garden you shall know us.

To the Great Lakes

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SPRINGS OF FLORIDA

(Continued from page 371)

The second spring in the state in size of flow is Blue Springs, near Juliette in Marion County. Here 349,166 gallons of water per minute boil up from an Oligocene limestone formation and flow into the Withlacoochee River. The water has a beautiful transparency and is deeply tinged with greenish blue. The surroundings are in their native wild state, and tall trees and abundant vegetation add to the charm of the scene. The spring is unused except by parties of bathers and picnickers.

Crystal River Springs, near the town of Crystal River, in Citrus County on the west coast, has a flow of 200,000 gallons per minute and is the head of Crystal River, a navigable stream flowing into the Gulf of Mexico. An ice plant is located at the spring head and the water is utilized in its product.

Itchatucknee Springs, six miles southwest of Fort White, Columbia County, has a flow of 153,000 gallons per minute and is the most important spring in that northern county. The water, which is hard and colored amber by organic matter, boils up from Oligocene limestones, doubtless of Vicksburg age. It is situated in a hammock and is the source of a small stream. No practical use is made of the spring.

Weekiwachee Springs, near Brooksville, in Hernando County, has a flow of about 150,000 gallons per minute, and Newland Springs, near Falmouth, in Suwannee County, has a discharge of about 100,000 gallons per minute.

Other springs of large size are Blue Springs (Volusia County), Suwannee Sulphur Springs (Columbia County), Poe Springs (Alachua County), Chassahowitzka Springs (Citrus County), Wekiwa Springs (Levy County), Blue Springs (Levy County), Seminole Springs (Lake County), Warm Springs (Sumter County), Branch Mill Springs (Sumter County), De Leon Springs (Volusia County), Lithia Springs (Hillsborough County), Sulphur Springs (Hillsborough County), Bugg Springs (Lake County) and Waldo Springs (Taylor County).

There are over forty of the larger springs which possess mineral properties to a noticeable extent, and the water is sold commercially from about twenty-two of these. Resort hotels and bath-houses have been built adjacent to a number of these, among them Green Cove Springs (Clay County), Worthington Springs (Bradford County), Espiritu Santo Springs (Pinellas County), Tampa Sulphur Spring (Hillsborough County), Suwannee Sulphur Springs (Columbia County), Hampton Springs (Taylor County), and Panacea Springs (Wakulla County).

At Branch Mill Springs, near Sumterville, Sumter County, a dam has been constructed across the stream and power is supplied for a mill. The majority of the larger springs are unused for any practical purpose, but from the scenic and climatic standpoints their contribution toward the assets of the state is one of magnitude and permanent worth.

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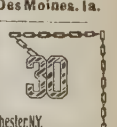

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Helps and Hints

FOR HOME AND GARDEN

The month of Christmas trees and yule-logs marks the close of the outdoor gardening year. With the exception of forcing bulbs indoors, bedding down borders and perennials, keeping heavy snow off branches to prevent their breaking, and making tentative plans for another season, there is little work to do.

* * *

Winter protection of flowers and shrubs is no simple task, and many amateur gardeners greet the spring with mourning because of failure in this department. The mulch should never be put on till the ground is frozen, for it is apt to prevent the ground from freezing, thus starting young plants too soon, and offering fine burrowing places for field mice and moles. Straw or a straw-like manure are better than leaves, for these mat down, holding moisture around the plant, which ends in rotting. Roses generally may be protected by heaping the soil around them for nine or ten inches, then covering with straw. More delicate roses ought to be covered carefully and completely.

* * *

Care for these plants as follows: shrubs, mulch with manure to prevent root and crown injury; conifers, mulch also with manure around base; privet hedges, fertilize in spring, and mulch with rich manure in winter; Japanese flowering plum, cherry and peach trees, a four-inch mulch of straw or straw-like manure; fruit trees, paint trunk and larger limbs with whitewash to prevent frost cankers.

* * *

About now take the bulbs being forced either in water or earth out in the light for flowering, so they will be in bloom by Christmas day, and pot other bulbs for flowering later. Hyacinths, paper white narcissi, crocuses, snowdrops and freesias will quickly bloom.

* * *

It is quite useless to keep your forced bulbs for another year with the view of forcing them again. Dutch hyacinths, however, can be used in the garden after forcing. Keep them in pots, gradually withholding water until the leaves turn yellow and dry off. Then store in a cool, dry place until the following fall. Then set along the edges of shrubbery or in odd corners. While they may not bloom the first year, they should be attractive the second.

* * *

If the birds have not already been taken care of, it is high time to hang out suet, bread-crumbs, corn and sunflower seeds so that the winter cafeteria will have plenty of customers. Shelters can be made very simply or purchased. It will be interesting to keep a list of those who visit your back yard dining room; among the callers you will find many rare birds not usually seen

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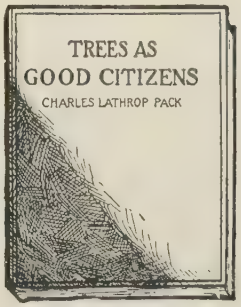

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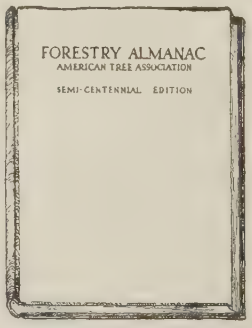

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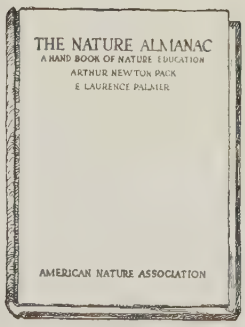

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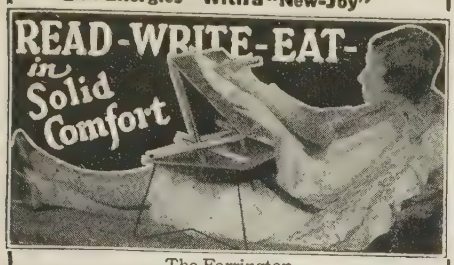

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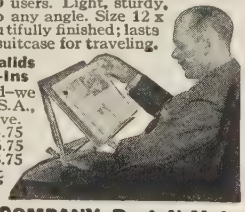

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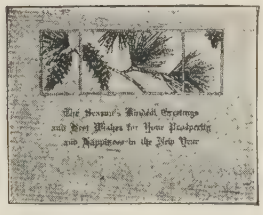

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WHAT'S IN THE HEAVENS

(Continued from page 372)

until the early morning hours to see it but in the spring it appears in the evening sky. In the United States it is not possible to see it anywhere fully above the horizon except in southern Florida. To see it at its best one should be in the southern hemisphere. In Cuba, as well as Florida, it is so low in the southern sky that it is apt to be a rather disappointing object.

Unique among observatories is The Southern Cross Observatory in Miami, Florida. This is an open-air observatory in one of the city's parks established by its founder, Mr. S. Lynn Rhorer of Atlanta, Ga., solely for the benefit of the public and to promote a general interest in astronomy. Thousands of visitors to Miami have enjoyed the pleasure of star-gazing at this out-door observatory which has eight 5-inch Clark telescopes. The untimely death of Mr. Rhorer this spring has left the fate of this observatory for the people in doubt. It is hoped, however, that its many friends in the city of Miami and elsewhere will continue the work that has brought inspiration and pleasure to many thousands.

Star-gazers farther north who must forego the pleasure of seeing Canopus, Achernar or the Southern Cross will find many objects of interest in the December evening skies, especially in the eastern sky where the vanguard of the brilliant winter constellations are now coming well into view. These include the Pleiades and Hyades in Taurus and Capella and The Kids in Auriga.

One should not fail to observe Jupiter this month, with a telescope if possible. This giant planet is now in Taurus a little to the northeast of Aldebaran in the Hyades. It is in opposition with the sun on December 3 and visible all night. Mercury, Mars and Saturn are all too close to the sun to be seen this month and Venus still in the morning sky is too close to the sun to be visible by the end of the month. On the 15th it rises about an hour before the sun.

FLORIDA FORESTS

(Continued from page 375)

mangrove in abundance. Continuing by way of the Tamiami Trail, we pass through the heart of the Everglades, a region of muck soils and a wonderland to all. Occasionally one will note dense jungles of trees interlaced with gigantic vines, but for the most part vast expanses of treeless, shrubless prairies, interspersed with ponds of the cypress, the Everglades covering four million acres of land. Drainage has opened vast areas of unbelievably fertile soil and presents possibilities that none can estimate today.

It is to the south of the Tamiami Trail that we reach the jungle of our boyhood dreams. Here, in the Royal Palm State Park and among the capes and keys, may be found forests just as dark and dense as any on the northern coast of South America. Here are the cabbage palmettos and the royal palms in abundance, the pond cypress and the bald cypress, the wild fig, mahogany, several mangroves, and the Jamaica dogwood. Here, the millions of mangroves, buttonwoods, and bays form the densest of undergrowth, and enormous vines entwine the whole into an almost homogeneous

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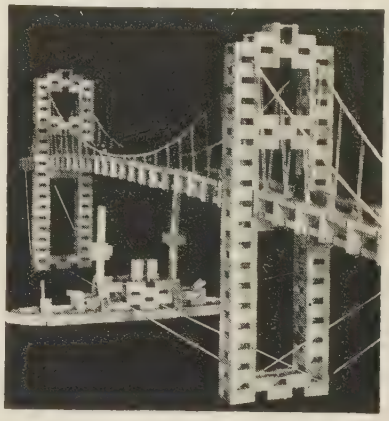

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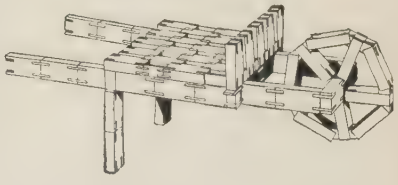
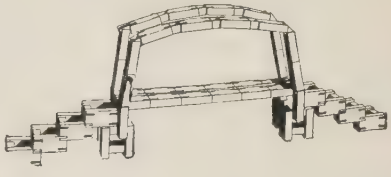


Wouldn't it be fun to make a wheelbarrow like this? and Tables, Chairs, Beds and all kinds of Furniture?



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mass. A Congressional Committee will journey to this region before many months to determine whether or not there should be an Everglades National Park. A tropical alligator-jungle park, if you please, that will be interesting to millions of Americans, as are other National Parks, because it has Caribbean attractions and is different.

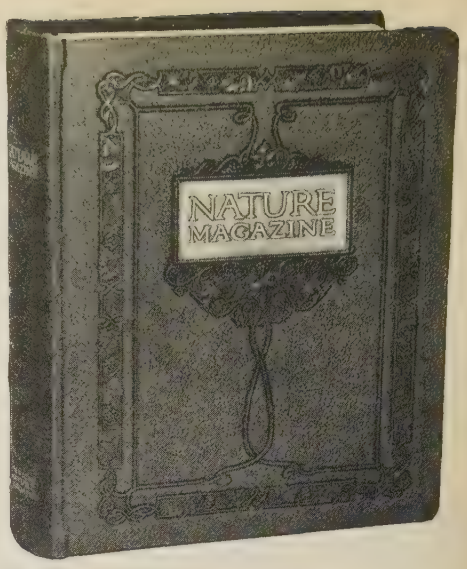
The forests of Florida mean all things to all men, but fundamentally, they represent a wealth of great importance to the State. From a standpoint of beautification, or of industry, their value must be recognized. The naval stores industry alone employs more than 14,000 people and pays in salaries and wages more than $10,000,000. Sixteen industries and trades are dependent upon the forests and over $64,000,000 are paid in salaries and wages to over 71,000 individuals. The sixteen forest-dependent industries and trades in Florida annually turn out products valued at more than $100,000,000. They produce nearly thirty per cent of all the wealth created in the State and forty-seven per cent of the value of all manufactured products. Over one half of all wage earners of our manufacturing concerns are employed by the forest and wood-using industries.

Nature is kind to Florida. The long growing seasons, fertile soils and abundant rainfall, well distributed throughout the year, combine to produce timber as few other states produce it. Sixty per cent of the land area of the State is suited to timber production. Early returns from turpentine operations exclude the "long time investment" bogy. The long established practice of "woods burning" alone stands in the way of profitable timber growing over vast areas that will sustain indefinitely a hundred million dollar industry.

Woods burning is practiced for a multitude of reasons but outstanding among them is the lack of appreciation of the value of forest protection. Fires burn practically every month in the year, destroying seeds, consuming the leaf litter on the floor of the forest, killing the baby trees, and injuring and retarding growth of the older trees. The fires burn up the shelter of the wild game and bird life, destroy nests, eggs, young quail and turkey, besides many beneficial insectivorous birds. "Stockmen's" fires, set to improve the range, in reality perpetuate the undesirable grasses and drive out the shallow rooted desirable grasses, thus preventing the cattle from obtaining satisfactory fall and winter feed.

The natural beauty of the countryside is destroyed and, instead of green forest areas with the abundant wild flowers for which the State is famous, tourists are too often confronted with blackened wastes, and many of our prettiest wild flowers are in danger of becoming extinct.

Excluding the Everglades, towns, cities, cultivated lands, highways, railroad rights-of-way and swampy areas, Florida can still account for 22,900,000 acres of forest land out of a gross land area of 35,111,000 acres. It is estimated that 15,000 fires annually burn over 13,000,000 acres of this wealth-producing land with a result that 10,000,000 acres of Florida's land lie idle. More than half of this unproductive land consists of the blank spaces in the forests and is oft-times overlooked by the casual observer. Ninety-seven per cent of the fires are man-caused and are therefore preventable.



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Within the State are found the two divisions of the Florida National Forest with a net area of 343,180 acres. The Ocala division is in Lake, Marion and Putnam Counties, and the Choctawhatchee division is in Okaloosa, Santa Rosa and Walton Counties. In this Forest, the United States Forest Service maintains a protective system and a nursery. Naval stores experiments are being carried on, as is also being done at Starke by a branch of the Southern Forest Experiment Station, again the work of the United States Forest Service. These demonstrations and experiments are doing much to stimulate the timber growing idea in Florida.

For twenty-four years a movement has been on to obtain State recognition of the value of the forest lands of Florida, their relation to a hundred million dollar industry, the damage done by woods burning and the uselessness of the practice. In 1927 the Legislature first recognized forestry as a state function and authorized the Governor to appoint the Florida Board of Forestry. On April 1st, 1928, just one hundred years after the establishment of the first national effort towards reforestation in America on Santa Rosa Island, the state that inaugurated that movement in the United States appointed her first State Forester. April 1, 1929 saw the close of her first year of active operation. Seven hundred thousand acres have been placed under protection in cooperation with the United States Forest Service and the property owners. Ten forest fire lookout towers have been erected on the seven protective areas. Two district foresters are in the field, seven rangers have been appointed. Many miles of telephone lines have been constructed and the towers have been manned during the dangerous season. Educational work has been started in the public schools.

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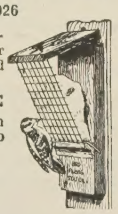

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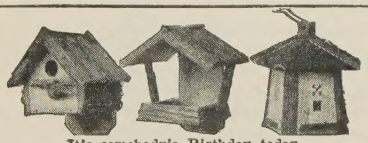

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tablished and over a half million forest tree seedlings will be available for distribution this fall to meet the tremendous demand for stock for reforestation purposes. Demonstration plantings have been established in three counties and the program for the next two years calls for similar plantations in every county in the State. A fire demonstration plot has been established and a careful record is being kept to determine the actual effects of woods burning upon forest growth.

The early efforts of the Florida Forestry Association and the Florida Federation of Women's Clubs, together with hundreds of interested individuals, are beginning to have their effect. Cattlemen, who once led the fight against fire prevention, are seeking plans for offering rewards for the conviction of those who set fire to woodlands. Idle acres, the result of woods burning, have made their imprint upon the state's income. Turpentine operators, who once felt that their salvation lay in broadcast burning for the protection of the highly inflammable cupped trees, have found economy in cooperative fire protection for the future of their business. A hundred million dollar industry can see the end of its raw material and is demanding forest fire protection. The state has awakened to the potential value of the cut over lands within its borders, as is manifest by the fact that the annual appropriation for forestry has been increased from $12,500 to $60,320. With Federal and private funds this means an annual budget in excess of $150,000.

Florida's forests mean all things to all men but a new viewpoint is prevailing. Florida is looking today not only to the trees but to the forest soil, and is rapidly approaching that period when through fire prevention this vast acreage will once more be restored to its real producing power; when forest land will become an asset instead of a liability, a factory for the production of the raw material of an enormous industry, a source of taxes, wealth, labor, and of happiness and prosperity for all.

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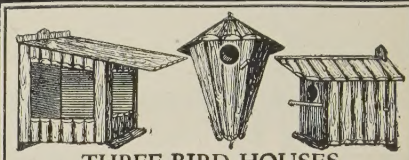

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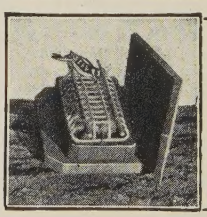

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The American Tree Association stands for a constructive policy of forest protection and extension, to increase appreciation of forests as natural resources essential to the sound economic future of the country.

The Association directs encouragement of tree planting by the public; disseminates popular forestry news for the information of editors of the daily press; and compiles and distributes forestry news and reports on legislative progress for assistance of active foresters in the field.

The American Tree Association

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GOOD EXAMPLE BY FLORIDA

IN 1927 Florida joined the list of states active in Forestry when a bill was passed providing for the protection of forests and woodlands, reforestation work and coöperation with the Federal government. Henry Lee Baker was made state forester and organization work begun.

The State Legislature has now granted an annual appropriation of $61,000 to the Florida Board of Forestry, an increase of $48,500 over the appropriation for the preceding year. This appropriation supplemented by funds from the Federal Forest Service and private property owners will allow the Florida Board of Forestry a budget of over $150,000.

Of this amount, $129,000 will be expended for educational and forest fire control work. With this coöperative fund it will be possible to expand the protected area by more than 1,000,000 acres. It will provide at least ten protective units, in addition to the seven in existence.

Sixteen thousand dollars will be devoted to educational work. This will be under the direction of H. A. Smith, Assistant State Forester. Five thousand dollars will be devoted to coöperation with property owners in the raising and distribution of forest tree seedlings, forest tree plantations, demonstration plots, improvement cuttings, and applied forestry in general. This work will be under the direction of C. H. Coulter. Based upon her population this is good work indeed. Florida is a great consumer of wood because of her need of millions of boxes for shipping of fruit and other products to northern neighbors. Anyone can see Florida needs a continuously steady flow of forest products as an aid to her major industry. The cheaper the price of boxes of course the cheaper the produce can be put in the market.

There has been a remarkable educational campaign underway on behalf of forestry in the Florida schools. The American Tree Association has given 23,435 Forestry Primers to the schools and women's clubs of the state. This Forestry Primer is the booklet that has now gone over the three million mark so great has been the demand on the part of educators. The American Tree Association reaches the coming generation with the forestry message through the Forestry Primer and Charles Lathrop Pack, the president, says the interest of the Florida teachers in forestry is most enthusiastic and encouraging. He adds that the editors of the state are keenly alive to the forestry question and have given the American Tree Association most hearty support in its educational work. Any teacher or committee head can have copies of the Forestry Primer just by telling their needs to the American Tree Association at Washington. Women's clubs find the Primer most useful in getting up at least one forestry program during the winter schedule.

Forestry is gaining everywhere. By a new law New York has begun a big planting program. Another is underway in Pennsylvania. From England comes a forestry example that is worth while. Because of the call of war England was faced with a tremendous demand for wood. She learned her lesson and formed the British Forestry Commission. Great Britain moves to put her forestry appropriation at five and a half million pounds, an increase of two million pounds; this is to be spread over annual installments for ten years. Thus her forest program for that period is assured. Mr. Churchill, chancellor of the exchequer, speaking in the House of Commons on the point, said: "The increased provision now proposed is the utmost which the Exchequer can undertake at the present time."

This will show plainly that Great Britain knows the value of forest products as close as possible to the point of greatest consumption. Based upon area available Great Britain is spending a lot of money on forestry. The same proportionate program by Uncle Sam on the available area basis would mean the putting to work of millions of idle acres growing forests. It would seem the United States should be able to more than double forestry appropriations if Great Britain is able to do so.

One of the unique features of Britain's policy is the way she is finding work for idle men in her forestry work. Then, too, in connection with the Ministry of Labor's plans for training men for overseas settlement the commission has provided camp sites and employment in a number of forests. Here the men are taken out of population centers and taught how to handle tools as well as get some knowledge of the woods.

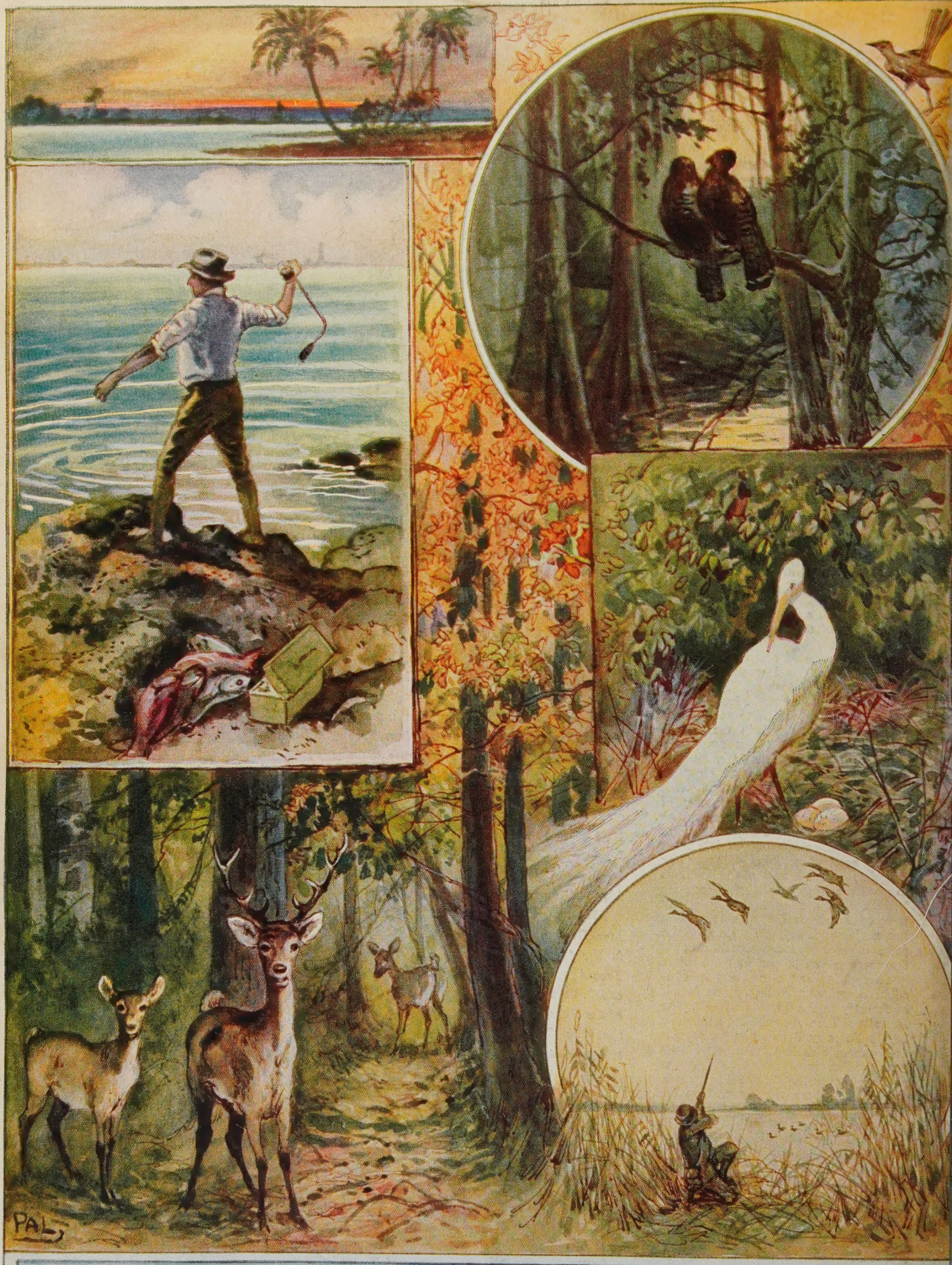
Funds follow forests. This is shown in the timber history of this country to anyone who traces the center of the lumber industry from New England in the early days, then to New York down into Pennsylvania, through the Lake States into Minnesota and then into the Rocky Mountain country and the Pacific Coast. The American business man must look this situation right in the eye right now. He must have forest products as close to his factory as possible. The future of his business depends upon the forest crops every year. He should demand this forest planting race start at once on our millions of acres of idle land. The producer depends upon the consumer. Their interests interlock and the one cannot live without the other. So it is they both depend upon forest products to keep the wheels of industry turning.

From this it will be seen that any state that moves to provide for forest crops every year makes a wise move. Florida, always forward looking, has taken steps in the right direction. Her forestry department should have the hearty support of every one of her citizens. Such a move provides the backbone for future prosperity.

"GRANDCHILD" OF WASHINGTON ELM ON MEMORIAL ROAD

A "GRANDCHILD seedling" of the famous Washington Elm that stood at Cambridge, Mass., will have a place on the memorial highway from the nation's capital to Mt. Vernon the American Tree Association announces. The offer is made by Mrs. James H. Dorsey of the Daughters of the American Revolution of Maryland so that plans can be made for placing it in 1932 at the time of the big celebration in honor of Washington's birthday. The gift has been accepted by those having the building of the memorial highway.

The "grandchild seedling" offered by Mrs. Dorsey has a long history and is listed in the "Hall of Fame" of the American Tree Association. There are two at the tomb at Mt. Vernon and another is in the grounds of the Governor's House at Annapolis where the then Gov. Warfield placed a bronze tablet on it.



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